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WMJ

COVER THEME
Recognizing the signs of elder abuse and neglect

In the United States, reports of elder abuse and neglect indicate that approximately 1 million to 2 million Americans aged 65 and older are affected. The patient-physician relationship places physicians in an ideal position to report suspected abuse cases but they often lack the time and training necessary to recognize the signs. A report in this issue of *WMJ* provides a valuable profile of pertinent elder abuse characteristics to assist physicians, so they can help ensure these patients don't fall through the cracks.

Cover design by Mary Kay Adams-Edgette.

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Thank you to our reviewers

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The Depravity of the Youth

Arthur J. Patek, AB, MD, *WMJ* Editor; Otto H. Foerster, MD, Assistant Editor

Editor's note: The following is excerpted from an editorial published in *WMJ*, Volume 5(12), May 1907, pp 684-686.

In certain matters—such as the advisability of the organization of clubs of boys and girls in connection with their school work, in the pursuit of various courses of amusement, art, craft, and culture, and in the use of the school play ground, there will in all likelihood be no serious difference of opinion. Such wholesome diversion, which will at the same time have an educational value, will make of the girls more competent and accomplished women and housewives, and of the boys more manly and self-reliant men.

Much honest difference of opinion will doubtless be expressed upon the subject of "Sexual Knowledge." The questions are:

1. Is it wise to keep the youth in ignorance as to the relation of sex? Or should instruction be provided for?
2. At what age of a child should such instruction begin?
3. Are parents always qualified to give such instruction?
4. When parents fail, should such instruction be provided for in our Public Schools by competent physicians or biologists, the sexes being segregated?

It has been freely argued and asserted of late years that because of the indifference of parents, or, at any rate, a dislike on their part to undertake the instruction of their children in matters pertaining to the sexes, children have—in their desire to have the veil of mystery lifted—gone to other sources for information, often sources inclined to give tainted advice.

Our own personal opinion is at variance with this teaching of the modern workers along these lines. We can see pitfalls presenting themselves where formerly the path for little feet was smooth. Young girls whose minds are healthy and pure need no instruction in matters pertaining to the relation of sex. Not only do they not need it, but it must be conceded that they grow into far more beautifully minded women if their innocence is conserved. There are many girls less well poised whose morals would suffer more than profit by any teaching that aims to concentrate their attention—even though it be with a finger of warning—upon matters that were hitherto little dreamed of in their philosophy; in such girls it needs but a little freedom of speech to kindle a desire for more knowledge, with the result that when in company with kindred spirits the information thus gained becomes a topic of conversation. An easy outcome of this is vicious thought, and then follow vicious habits.

To a degree, though not with the same force, this argument applies to boys. We believe however, that in their case a certain amount of instruction can be profitably given, but the responsibility of this we would prefer to see placed upon the parent and physician.

In any event, it is our belief that this instruction, as proposed by many, if collectively administered to young people, is harmful, because it forms an opening wedge for a line of thought among those who already have much in common, and who would therefore make this new acquisition common property too.

The school should not consider this part of a pupil's education within its province, nor is the teacher the one to whom this power of attorney is to be delegated by the parent. When necessary to give instruction in these matters, it should be in private séance, never in class.

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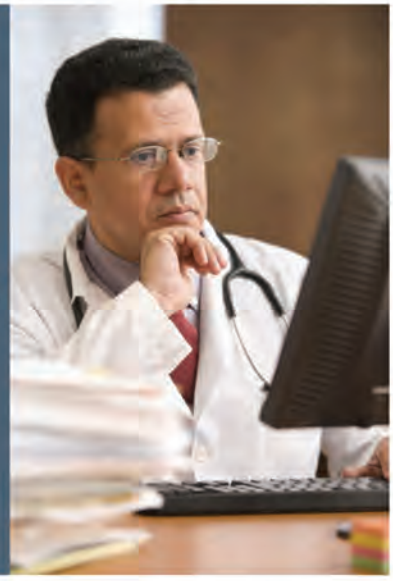

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Isolated elders and precocious children

John J. Frey, III, MD, Medical Editor

Two articles featured in this issue of *WMJ* point to some of the societal forces that affect medical practice. I often have mused that on any given day, I see patients for whom families are the support necessary for living life fully and safely and, in contrast, see patients for whom families represent unreasonable demands on time, money, and safety. Articles in this issue address both of those opposites.

The study by Thomson and colleagues[1] highlights the increased level of awareness that physicians must have about the potential for abuse and neglect of their older patients. While the focus for their study was Milwaukee County over a 4-year period using the Milwaukee County Department on Aging data, many of their findings can and should be informative for clinicians in other cities and rural areas in the state and beyond. Most practices now include smoking as a vital sign to identify patients who would like to stop smoking. Medical students and residents are taught to ask women, in confidential ways, about their safety at home and for any history of an abusive relationship. We are screening for depression far more often in primary care than in years past, as the awareness of mental health problems grows in all populations. But who of us routinely asks our elderly patients living with family or friends if they have any concerns for their own safety or for being mistreated? How many of us have information in our medical records identifying which of our older patients live alone and are able to care for themselves or know the appropriate community agency to get involved if we have concerns?

Thomson and colleagues found that the highest source for reporting possible elder abuse were physicians, which means that many of us are aware of the issues and the proper referrals. But the majority of cases were not physician-initiated, so there is still a great deal of work to do to increase practice information systems to recognize high-risk elderly.

Who of us routinely ask our elderly patients living with family or friends if they have any concerns for their own safety or for being mistreated?

Klinenberg's book on the Chicago heat wave in 1995 that killed 521 people over 3 days showed that, in the end, poor, minority elders living alone were at highest risk of death.[2] I have been haunted by the thought, should another such calamity happen, of whether our practice would be able to identify patients who need services that would prevent them from dying alone.

US census projections are that, by 2050, 1 in 5 Americans will be over 65. The plains states and upper Midwest have the highest concentration of elderly, according to the 2010 census, and the number of elderly in those states undoubtedly will continue to grow.[3] The most rapidly growing population is what is termed the "oldest old," or people over 85. Census data show that 50% of people in this demographic need assistance for activities of daily living, and it's likely that the prevalence of self-neglect or abuse in our older patients will only grow. The real question is whether physicians in communities are prepared to recognize, report, and begin to set up systems to respond to situations we encounter in an increasingly challenging population.

A parent—or grandparent—regularly reading to their children or grandchildren has long been noted to influence the acquisition of language and reading skills.[4] Sometimes we have the startling experience of the child suddenly reading to us. Treffert's article in this issue[5] addresses the increasing complexity of working with hyperlexic children and their parents. Hyperlexic children often have "autistic behaviors" and, in a world where autism has been more widely described since the mid-20th Century, raise concerns for families about their children's behaviors. Treffert describes 3 types of hyperlexia, not to create yet more ways of medicalizing behaviors, but to show the range of people who are often termed "precocious." They range from early readers, who in past years may have been labeled "gifted" rather than a "problem," to children who exhibit social and behavioral awkwardness—and in some cases, late speech development—but who are exceptionally smart, particularly with words.

I confess a substantial reluctance to label behaviors as "diseases," because labeling has long had potential for creating terrible consequences for individuals and societies—whether for their health insurance premiums or their job security. Just as Gardner described intelligence as having a wide variety of forms rather than a single term that was used for academic performance,[6] Treffert describes a typology of hyperlexia that doesn't penalize children with labels that affect many components of their lives. This, in the long run, is a good thing for everyone involved—parents, children, teachers, and physicians.

This issue also contains a 4-year cohort study by Poola and colleagues[7] looking at the natural history of subclinical hyperthyroidism, emphasizing a "wait and watch" philosophy that should guide clinicians who have patients with low thyroid-stimulating hormone TSH levels, normal T4 and T3 levels and no demonstrable nodules. Two case studies, one on an unusual consequence of an unusual tickborne illness[8] and a pericarditis relating to smallpox vaccines received by 2 soldiers[9] teach us to look for relationships that often are not the first choice in a differential diagnosis. Zebras do happen.

Finally, "The Depravity of Youth," an editorial published in *WMJ* 104 years ago, raises 4 questions about sex education in schools. While the editorial position from 1907 was quite different than would be the case today—most of us wouldn't see giving girls education about sex producing "vicious habits" as the former editors mention—who educates, where it occurs, and what the role of physicians should be still form part of the discussion about that issue in 2011.

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An Analysis of Elder Abuse Rates in Milwaukee County

Mary J. Thomson, BS; Lauren K. Lietzau, BS; Megan M. Doty, MD; Linda Cieslik, PhD; Ramona Williams, MSW; Linda N. Meurer, MD, MPH

ABSTRACT

Introduction: The elder abuse and neglect burden in Milwaukee County, Wisconsin, is substantial, with 3384 reports made from 2006 to 2009. Current prevalence estimates are determined from reported cases only and are likely underestimated. Provider awareness of victim and perpetrator characteristics is necessary to increase recognition and response.

Methods: A cross-sectional analysis of elder abuse and neglect cases reported to the Milwaukee County Department on Aging (MCDA) from 2006 to 2009 was performed to provide a profile of the county's elder abuse burden by victim, perpetrator, and reporter characteristics. Annual reporting trends were identified using Poisson regression analysis.

Results: Fifty-eight percent of MCDA reports of abuse were substantiated after investigation. Victims in Milwaukee County tended to be older than 75 (64%), female (64%), and white (62%). Reporting rates to the MCDA were significantly lower in 2009 than 2006. Perpetrators were often adult children (48%) or a spouse (14%). Forty percent of life-threatening cases of self-neglect were due to unfulfilled medical needs. Most reports were made by medical professionals (23%), relatives of the victim (21%), and community agencies (18%). Only 13% of elder abuse victims were placed in nursing homes and assisted living centers; many received services to assist independent living.

Discussion: Although this study is limited to reported cases only, it provides a valuable profile of pertinent elder abuse characteristics in Milwaukee County.

Conclusion: Characteristics of vulnerable elders, potential abusers, and investigation outcomes are described to inform clinical practice about this important social issue.

BACKGROUND

In the United States, reports of elder abuse and neglect indicate that approximately 1 million to 2 million Americans aged 65 and older are affected, with national prevalence assessments ranging from 2% to 10%.[1,2] Current prevalence values are determined from reported cases only and are likely grossly underestimated due to under-recognition in the community; it is estimated that for each case reported to adult protective service agencies, 5 more cases go unreported.[3] Research has shown that elders are unlikely to report experiencing abuse due to victim shame, abuser intimidation, and fear of institutionalization.[4] This is further complicated by the fact that the abuser may be a loved one or a dependent child. Health care providers also may lose access to a vulnerable elder, either by abuser intent or the elder's autonomous decision to forgo seeking medical care. Even when reporting elder abuse is mandatory, physicians and other medical professionals often lack the time and training necessary to recognize the signs of abuse and neglect. The purpose of this article is to gain a deeper understanding of the victim and perpetrator characteristics associated with elder abuse so that such information can be used to inform clinical practice.

The medical literature defines several risk factors for elder abuse and neglect, which are depicted in Figure 1.[5] Cognitive impairment, depression, behavioral problems, caregiver burden or stress, poverty, poor social network, and living with others have relatively strong associations with elder abuse risk in the literature. Other risk factors identified, such as age, gender, and functional impairment, have been shown to have inconsistent associations or are limited to expert opinion only.

Reporting laws for elder abuse differ state by state; Wisconsin relies largely on voluntary reporting. However, certain groups, including physicians and other health professionals, are required to report suspected abuse if an elder treated in the course of his or her professional duties requests a report be filed. Reporting is also mandatory if the physician determines that (1) the elder is either at immediate risk of serious harm (eg, bodily harm, death, sexual assault, significant property loss) and is unable to make an informed judgment about reporting, or (2) another elder is at imminent risk of serious harm by the

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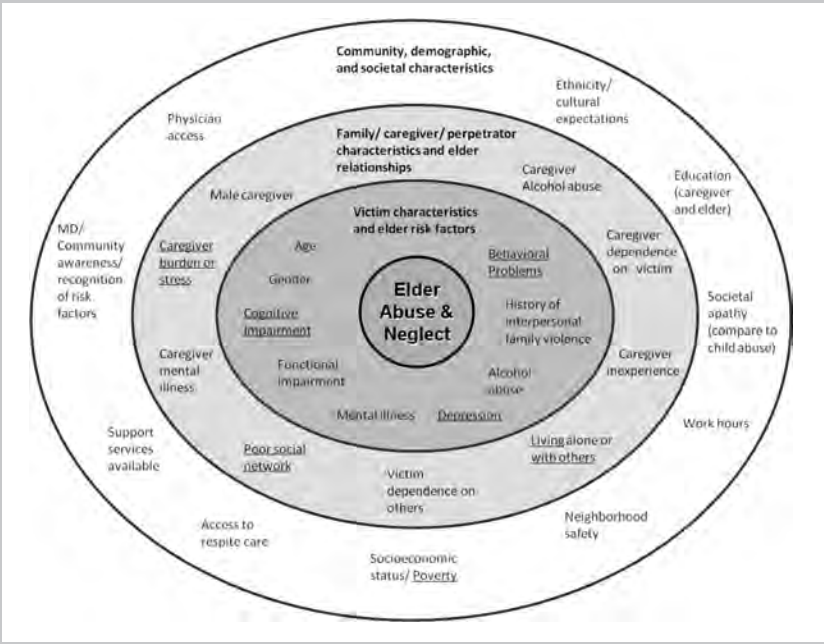

Figure 1. Socioeconomic model of risk factors for elder abuse and neglect.
Note: Underlined risk factors signify consistent or relatively strong associations in the medical literature. All other terms are described in the medical literature, but studies are inconsistent in demonstrating the association, or limited to expert opinion only.

Table 1. Milwaukee County Department on Aging Primary Categories of Adult-at-Risk Abuse, Neglect, and/or Exploitation

Physical abuse	Any willful infliction of physical harm including shaking, shoving, hitting, and kicking
Emotional abuse	Verbal abuse, threats, isolation from family and friends, silent treatment
Financial exploitation	Misuse of money or possessions, forced or tricked signing of legal documents (eg, Power of Attorney, will)
Sexual abuse	Inappropriate touching, forced sexual acts
Neglect by others	Refusal to provide food, water, clothing, shelter, personal hygiene, or medication
Self-neglect	Refusal or inability to provide food, water, clothing, shelter, personal hygiene, or medication for one's self
Unreasonable confinement or restraint	Tying or locking a person up
Treatment without consent	Failure to obtain informed consent before administering medical care

suspected perpetrator.[6] An exception to the mandatory reporting requirement is made if the physician does not believe it is in the best interest of the elder at risk to file a report. In this situation, the physician must document the reason for his or her belief in the elder's medical record.

In Wisconsin, 5316 cases of abuse or neglect were reported in 2009. Milwaukee County was the source of 15% of those reports, with 790 cases of elder abuse referred to the Milwaukee County Department on Aging (MCDA). MCDA is the lead agency for receiving and responding to reports of elder abuse and neglect in Milwaukee County. MCDA defines 8 categories of abuse: physical abuse, emotional abuse, financial exploitation, sexual abuse, neglect by others, self-neglect, unreasonable confinement or restraint, and treatment without consent (Table 1). The Medical College of Wisconsin (MCW) and MCDA have partnered to increase recognition and referral of elder maltreatment by physicians and community service providers through the development and dissemination of educational materials (Stop Abuse and Neglect of Elders—SANE)[7] and surveillance of elder abuse reports in Milwaukee. This cross-sectional study describes the county's baseline elder abuse and neglect burden by victim, perpetrator, and reporter characteristics, using reports of elder abuse and neglect made to MCDA from 2006 to 2009.

METHODS

County agencies like MCDA report details of elder abuse investigations to the state using the Wisconsin Incident Tracking System (WITS). During the course of an elder abuse investigation, MCDA employees enter all known information about the elder and possible abuser(s) into a WITS online form.

The WITS database was used to examine elder abuse in Milwaukee County for reports made to MCDA from January 2006 to December 2009. These years were used to determine reporting trends prior to the 2010 dissemination of the SANE curriculum. Two WITS datasets containing details of each incident and characteristics of victims and perpetrators were analyzed using Stata 10.0 (Stata Corp LP, College Station, Texas). Variables included primary category of abuse, MCDA investigation result, referral source, elder demographics (age, gender, ethnicity, living arrangement, presence of morbidities such as dementia or alcohol abuse, and whether this was the first MCDA report filed for the particular elder), services offered to the elder, and perpetrator demographics (age, gender, relation to elder, history of drug/alcohol abuse or mental illness). Data was analyzed through tabulation of reports by different categories, such as age and category of abuse. The Poisson regression model

was used to look for significant changes in the number of reports for each year compared to 2006 while accounting for the population at risk in each year. Similar Poisson models with a change in referent year were used to examine reporting changes from 2007 to 2008 and from 2008 to 2009. Incidence rate ratios (IRR) and their 95% confidence intervals (CI) are shown. Chi square tests were used to compare gender and age groups with their respective proportions in Milwaukee County. Milwaukee County population estimates from the Wisconsin Department of Health Services were used to approximate the number of adults over 60 years old living in Milwaukee during 2006 to 2009.[8] With the exception of the Poisson regression model, data from the 4 years was combined to obtain a larger sample size for all analyses.

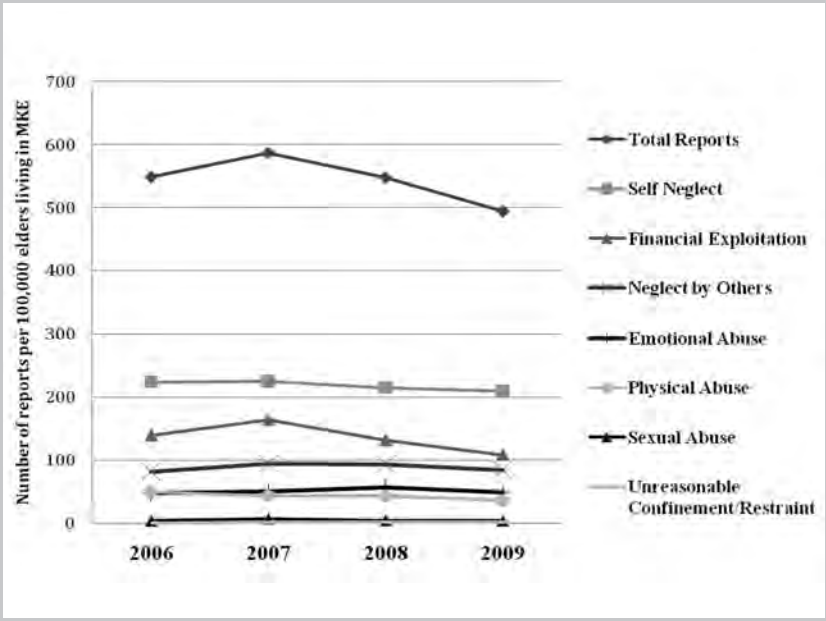

Figure 2. Annual rate of reports made to the Milwaukee County Department on Aging per 100,00 elders (60+) living in Milwaukee County.

Abuse cases were included based on outcome. Three outcomes for each MCDA investigation exist. The report can be "substantiated," meaning the investigation found the elder was at risk for abuse. It can be "unsubstantiated," meaning the investigation determined that the elder was not at risk for abuse, or that signs of abuse were discovered but the elder denied such abuse. Finally, the report can be "unable to be substantiated." This can mean a variety of things; mainly that MCDA did not find enough evidence to support either outcome.

To obtain a general overview of what types of abuse are being reported to MCDA, all reported cases were included in analyses of referral source, annual referral trends, and services offered by MCDA. Because the main goal of this project was to describe actual cases of abuse in Milwaukee County, only substantiated reports were included in all other analyses.

When someone contacts MCDA requesting information about elder abuse, and MCDA does not suspect abuse during this contact, the primary category for the call is filed as "Information Only." Such referrals to MCDA were removed from the analysis. Reports where the adult at risk was under the age of 60 also were excluded. For perpetrator analyses, reports where perpetrator age was unknown or reported as 0 were excluded as well.

RESULTS

A total of 3384 elder abuse reports were investigated by MCDA from 2006 to 2009 (823 in 2006, 912 in 2007, 859 in 2008, 790 in 2009). Cases of substantiated abuse made up 57.6% of total reports to MCDA; 32.7% of reports were found to be unsubstantiated, and 9.6% were unable to be substantiated. The rate of reports made to MCDA annually per 100,000 elders living in Milwaukee is shown in Figure 2.

Table 2. Poisson Regression of Number of Abuse Reports by Year

Year	Incidence Rate Ratio	95% Confidence Interval
2006	1.00	Referent year
2007	1.07	0.97-1.18
2008	1.00	0.91-1.10
2009	0.90	0.82-0.99

Note: Adjusted for population aged 60 years and older in each year.

There was a significant 10% decrease in the number of reports made to MCDA in 2009 compared to 2006 (IRR = 0.90; 95% CI 0.82 - .99. See Table 2. No significant change was found in the number of reports from 2006 to 2007 (IRR = 1.07; 95% CI .97 - 1.18) and 2007 to 2008 (IRR = 1.07; CI .98 - 1.18). There was a significant decrease in reports from 2008 to 2009 (IRR = 0.90; 95% CI = 0.82 - 0.99). The significant changes were associated with a decrease in the number of financial exploitation reports to MCDA in 2009 compared to 2006 (IRR = 0.78; 95% CI 0.64 - .95). No statistically significant change was found in the annual number of reports for other categories of abuse ($P > .05$).

Of significant importance in the study are those sources reporting elder abuse in Milwaukee County. Medical pro-

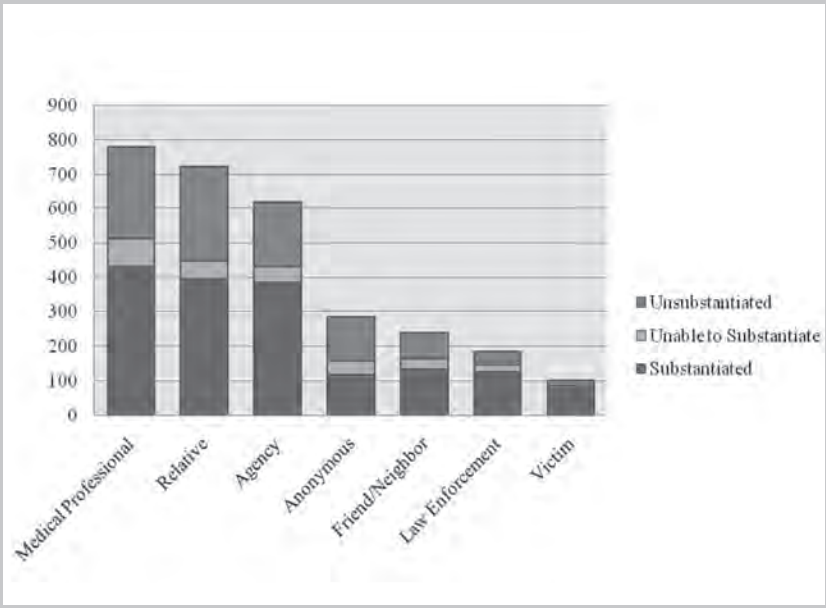

Figure 3. Milwaukee County Department on Aging (MCDA) investigation result by referral source. Note: This figure only includes the 6 most common referral sources and victim referrals investigated by MCDA during 2006-2009.

fessionals made the most referrals (23.0%) to MCDA from 2006 to 2009. The next highest categories were relatives of the alleged victim (21.4%) and "agency" (18.3%), which includes external agencies such as social service or home health agencies. Examination of outcomes of elder abuse investigations reported by each referral group demonstrated that 55.3% of referrals by medical professionals are substantiated after investigation (Figure 3). Interestingly, while only 3.0% of the referrals came from alleged victims, they had the lowest rate of unsubstantiated abuse for any of the referral sources (16.5%).

During the course of an investigation, MCDA may determine that the elder at risk would benefit from referrals to various services, regardless of whether abuse was substantiated or not. The list of services offered is extensive, and includes home-delivered meals, respite care, designation of substitute decision-maker, and placement into facility-based care. Nearly two-thirds of reports resulted in a service being offered; only 12.7% resulted in placement referrals to "facility based care" settings, including assisted living homes, nursing homes, and alcohol or drug rehabilitation centers.

To examine actual cases of abuse and neglect, further analysis of victim characteristics was performed with substantiated reports only (n = 1950). Elders over the age of 75 were over-represented ($P < 0.0005$); they made up 63.5% of MCDA reports, while only accounting for 39.6% of the elderly (age 60+) population in Milwaukee County. Women were involved in 63.8% of the remaining cases (n = 1947, 3 cases were excluded due to unknown gender), which was found to be significantly higher than the proportion of women in the elderly population (58.9%, $P < 0.0005$).

The majority of adults were white (62.0%), followed by African American (24.7%), and not reported or unknown (12.4%). Seventy percent of the calls made to MCDA were first-time reports for a particular elder.

Self-neglect was the most common form of elder abuse reported, with 1361 cases between 2006 and 2009. Medical professionals reported the most cases of self-neglect (26.3%). Relatives of the elder and agencies made up 20.2% and 12.2% of the referrals, respectively. Elderly self-neglect victims were commonly described as frail (64.8%) and often suffered from Alzheimer's disease or related dementia (19.8%) and/or some other form of mental illness (19.3%). In addition, 21.5% of these elders had another medical condition, and 15.4% suffered from alcohol or drug abuse (Table 3). More than 96% of self-neglect cases occurred in an elder's place of residence. Most commonly, victims lived alone in their own home or apartment (52.3%), but cases also were reported for elders living in their own home with others (29.9%). Self-neglect of an adult living with others can occur when an elder resides with someone not responsible for his or her care or with someone who is unable to provide care. Characteristics of self-neglect victims are shown in Table 3. Among the substantiated self-neglect cases in Milwaukee County, 12.9% were reported as life-threatening and were due to unfulfilled medical needs (39.8%), unsafe or unsanitary living environments (17.7%), or unmet physical needs (15.0%).

Types of elder abuse involving a perpetrator were combined and analyzed separately from self-neglect. These include financial exploitation, neglect by others, emotional abuse, physical abuse, sexual abuse, and unreasonable confinement and/or restraint. There were 2022 cases of abuse by a perpetrator reported from 2006 to 2009. Most of these reports were made by home health nursing and other agencies (22.4%), relatives (22.2%), and medical professionals (20.9%). Victims contact MCDA more often for these types of abuse (4.8%) as compared to self-neglect (0.9%).

In contrast to cases of self-neglect, 46.2% of the victims of substantiated abuse by a perpetrator were living in their own home or apartment with another person. More than 22% were living alone in their own home, and 19.5% were living

in a type of group home, including adult family home, nursing home, community-based residential facility, or residential care apartment complex. The most common characteristics of elders subject to abuse by a perpetrator were frailty (70.7%), Alzheimer's disease or related dementia (25.9%), medically fragile or other medical condition (20.6%), mental illness (9.2%), and physical disability (9.6%). Also, 5.2% of the elders were described as disoriented or confused, and 5.1% had impaired mobility (Table 3).

Table 3. Top Victim Characteristics of Self-Neglect Elderly and Elders Abused by a Perpetrator

	Self-Neglect (n=875)	Abuse by Perpetrator (n=1075)
Frail elderly	567 (64.8%)	760 (70.7%)
Alzheimer's or related dementia	173 (19.8%)	278 (25.9%)
Medically fragile/other medical mondition	188 (21.5%)	221 (20.6%)
Mental illness/chronically mentally ill	169 (19.3%)	99 (9.2%)
Physically disabled/other physical disability	57 (6.5%)	103 (9.6%)
Disorientated/confused	71 (8.1%)	56 (5.2%)
Alcohol/drug abuse	135 (15.4%)	37 (3.4%)
Mobility impaired	42 (4.8%)	55 (5.1%)

The perpetrator was the elder's son or daughter in almost half of the cases (48.3%), and the elder's spouse in 14.5% of the cases. Most commonly, the perpetrator is an adult male son, although perpetrator gender is almost evenly split; 53.0% were men, and 46.6% of them were women. Perpetrator age was similar to that of an elder's adult children; 67.2% of the perpetrators identified in substantiated abuse were 30-59 years of age. Those >70 years of age made up 14.9% of the perpetrators, consistent with the elder's spouse.

WITS data included perpetrator characteristics of alcohol and drug abuse or mental illness only after 2006. From 2007 to 2009, 20.9% of the perpetrators were reported to have an alcohol or drug abuse problem, and 14.1% had a mental illness.

DISCUSSION

WITS data provided a profile of elder abuse and neglect in Milwaukee County that helps inform health care professionals of the abuse burden. Self-neglect was the most common type of abuse, which mirrors nationwide statistics according to the 2004 Survey of State Adult Protective Services.[9] When the Milwaukee County profile is compared to the risk factors for elder abuse established in the medical literature (Figure 1), several similarities are seen among common victim and perpetrator characteristics, such as presence of Alzheimer's disease or related dementia and history of alcohol or substance abuse. However, while advanced age of 75 years and older and female gender were found to be over-represented among MCDA reports, they have not been identified consistently as risk factors in the literature. Self-neglect victims in Milwaukee County often are characterized by cognitive impairment and behavioral problems due to dementia and mental illnesses.

This study revealed a decrease in the number of reports made to the MCDA in 2009, primarily related to a decline in financial exploitation reporting. Considering the recent economic downturn, this decrease may be due to failure to recognize this kind of abuse instead of a decrease in instances of financial abuse in Milwaukee County. Further research is needed.

As stated previously, victims rarely report abuse, and this may be due to fear of institutionalization. However, only 12.7% of the elders in Milwaukee County received placement referrals to "facility based care" settings, including assisted living homes, nursing homes, and alcohol or drug rehabilitation centers. More often, MCDA offers a variety of services that help elders maintain independence in their homes.

Almost one-third of the elder abuse reports made to MCDA were unsubstantiated (32.7%). This is discouraging at first, but an unsubstantiated case can be a result of several circumstances. False claims do occur, either because a situation was misunderstood by the referral source, the referral source did not know all of the facts, or it was an intentional false claim to retaliate against an elder or caregiver. Additionally, elders themselves often deny abuse; they either truly do not consider certain actions abuse or exploitation, they are protecting an offender, or they are allowing the actions or situation by their own free will. Finally, the situation does not always meet the statutory definition of abuse, neglect, or exploitation. Often a suspected case that cannot be substantiated is closed, leaving the elder at continued risk unless an additional report is made. Because of this, it is imperative that physicians continue to report abuse seen repeatedly in a particular elder.

Several limitations are defined in this study. because this study is descriptive in nature and represents only those cases that are reported to MCDA, it remains undetermined whether the characteristics actually represent risk factors of abuse for elders residing in Milwaukee County or just common characteristics among reported cases. In addition, the WITS database was completed for administrative purposes only, so it lacks the completeness and categorization of a standard research database. Many of the variables, such as referral source or particular victim characteristics, are nonspecific and may be interpreted subjectively by each MCDA investigator upon entry of an abuse report. For example, the referral source "medical professional" does not clearly define whether a referral came from a physician, physician assistant, nurse practitioner, nurse, medical assistant, or any of several healthcare workers. Similarly, the

elder characteristic "frail" may be subject to several interpretations, including weak, in poor health, and of advanced age. For the purposes of this analysis, it was not possible to further define those variables. In addition, the perpetrator dataset was found to hold less complete data than the main elder abuse dataset, because MCDA employees often knew less identifying information about the perpetrator than they knew about the victim.

Finally, it is impossible to know with certainty the distribution of actual abuse in the "unable to substantiate" category. With that in mind, "substantiated" reports were the only cases where abuse was definitively found after an investigation, so they were the only cases used to describe actual abuse.

CONCLUSION

The elder abuse burden in Milwaukee County is substantial. With more than 3300 reports of abuse and neglect in 4 years and a rapidly growing elderly population, this problem holds significant relevance for physicians. Even though the number of reported cases dropped in 2009, it does not mean the number of elders being abused has done so. The patient-provider relationship places physicians in an ideal position to recognize and report suspected cases and prevent abused elders from falling through the cracks. Providers must make every possible attempt to recognize abuse by others and self-neglect early in the geriatric population because failure to do so can have devastating consequences. This cross-sectional study describing elder abuse victims and perpetrators identifies key characteristics of the vulnerable elder and potential abuser to inform and increase awareness of physicians and community service providers on this medically and socially germane issue.

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A Retrospective Study of the Natural History of Endogenous Subclinical Hyperthyroidism

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ABSTRACT

Objective: The treatment of subclinical hyperthyroidism is controversial because the natural history is uncertain. We undertook a retrospective study to examine the natural history of endogenous subclinical hyperthyroidism.

Methods: Between 2002 and 2006, we identified 116 patients with thyroid-stimulating hormone (TSH) concentrations <0.4 µIU/mL but normal free thyroxin and triiodothyronine or free triiodothyronine levels and >6 months of follow-up. The medical records of these subclinical hyperthyroid patients were reviewed for demographic data, clinical outcomes, and thyroid function test results. Because the etiology of hyperthyroidism could not be identified in 57 (49%) patients, we compared patients with normal-sized or diffusely enlarged thyroid glands with patients with nodular thyroid glands. We also compared the results of patients with initial TSH levels <0.1 µIU/mL to patients with TSH levels between 0.1 and 0.39 µIU/mL, and patients age <65 years to older patients.

Results: Of 116 patients with subclinical hyperthyroidism, 88 (76%) were women and 28 (24%) were men. They ranged in age from 19 to 98 years (mean = 55 years). Ninety-eight patients did not have thyroid nodules, and 18 had thyroid nodules. Follow-up ranged from 6 months to 6.5 years (median, 3.2 years). TSH reverted to normal in 58 (59%) patients without nodules; we treated only 4 (4%) of these patients for hyperthyroidism. In contrast, TSH levels in only 3 (17%) patients with nodules reverted to normal and 7 (39%) received antithyroid treatment. Atrial fibrillation was present in 8 (8%) patients without thyroid nodules and in 3 patients (17%) with thyroid nodules (*P*=.373). There were no significant outcome differences based on initial TSH levels or age.

Conclusion: We conclude that most patients with subclinical hyperthyroidism who do not have thyroid nodules rarely require antithyroid therapy but should be followed carefully.

INTRODUCTION

Subclinical hyperthyroidism is defined as a low or undetectable thyroid-stimulating hormone (TSH) and normal free thyroxin (FT_4) and free triiodothyronine (FT_3) concentrations.[1]

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Patients with subclinical hyperthyroidism usually do not display clinical features of hyperthyroidism. Endogenous hyperthyroidism results from the usual thyroid disorders that cause overt hyperthyroidism (eg, Graves disease, silent thyroiditis, toxic nodular goiter, and toxic nodule), whereas exogenous subclinical hyperthyroidism is caused by the ingestion of thyroid hormone. Endogenous subclinical hyperthyroidism affects approximately 1% of the general population. The treatment of subclinical hyperthyroidism is controversial because the frequency of progression to overt hyperthyroidism is unknown.[2] Therefore we undertook a retrospective study to examine the natural history of endogenous subclinical hyperthyroidism in our patient population.

PATIENTS AND METHODS

After approval of the Gundersen Lutheran Human Subjects Committee, we performed a retrospective review of TSH test results recorded between 2002 and 2006; 1463 patients with TSH levels below the normal range were identified. Patients were excluded from further analysis if they had elevated FT_4, triiodothyronine (T_3), or FT_3 levels. Also excluded were patients with nonthyroidal illnesses who were acutely ill when TSH was measured; patients ingesting thyroid supplements, glucocorticoids, or amiodarone; pregnant women; patients without at least 1 follow-up TSH measurement; and patients with <6 months follow-up. The final study group consisted of 116 patients with low TSH levels but normal FT_4 and T_3 or FT_3 concentrations and at least 6 months of follow-up.

A technician trained in data collection reviewed the medical records of subclinical hyperthyroid patients. The cause of hyperthyroidism was identified, if possible, and the clinical outcome and thyroid function test results were tabulated. Also

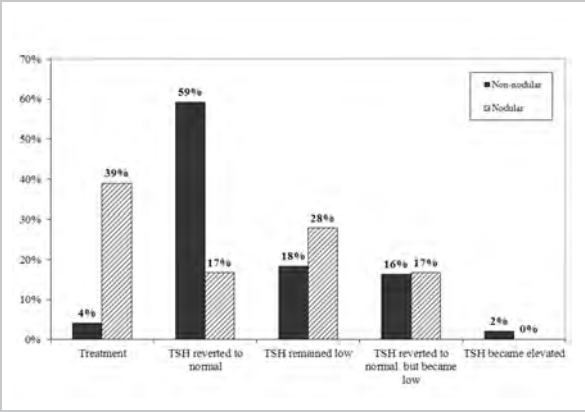

Figure 1. Change in clinical status between nonnodular and nodular patients, median follow-up period of 3.2 years.
TSH = thyroid-stimulating hormone.

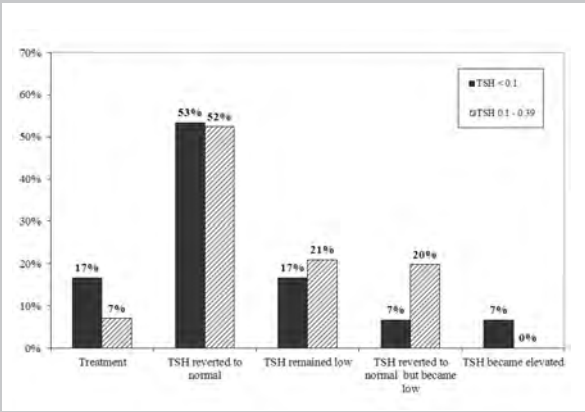

Figure 2. Change in clinical status in patients with initial TSH levels <0.1 μIU/mL and patients with TSH levels between <0.1 and 0.39 μIU/mL.
TSH = thyroid-stimulating hormone.

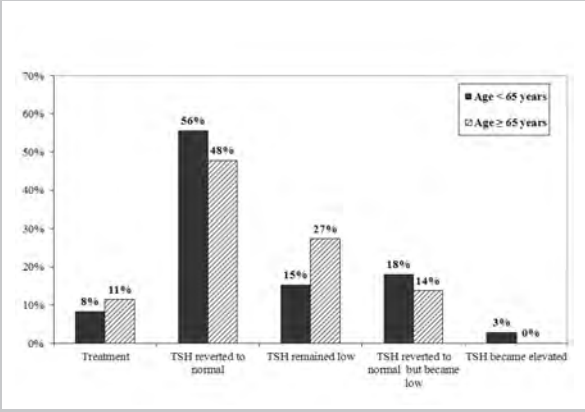

Figure 3. Change in clinical status in patients <65 years of age and older patients.
TSH = thyroid-stimulating hormone.

recorded was the frequency of atrial fibrillation. When the etiology of hyperthyroidism could not be determined or the data was unclear, the medical records were reviewed by 1 or 2 of us (RP, RHC).

Radionuclide uptake and/or scans were performed by standard techniques in 14 of 18 (78%) patients with palpable thyroid nodules, but in only 13 of 98 (13%) patients without thyroid nodules. Thyroid-stimulating immunoglobulins (TSI), thyroid peroxidase antibody measurements, and thyroid ultrasonography were performed in only a few patients.

Serum TSH was measured by an electrochemiluminescense sandwich immunoassay. The assay had a functional sensitivity of 0.02 μIU/mL and an adult reference range of 0.4 to 5.5 μIU/mL. Serum FT_4 was measured by an electrochemiluminescense competition immunoassay and had a normal range of 0.9 to 1.7 ng/dL. Serum T_3 was measured by an electrochemiluminescense competition immunoassay and had a normal range of 60 to 181 ng/dL. The Mayo Medical Laboratory measured FT_3 by an immunoenzymatic assay that had a normal range of 2.0 to 3.5 pg/mL. The Mayo Medical Laboratory also measured TSI by recombinant bioassay. The normal range was ≤1.3 TSI index. Statistical comparisons were made using χ^2 and Fisher exact tests. All statistics were calculated using SAS 9.2 (Cary, North Carolina) software. An alpha level of 0.05 was considered statistically significant.

RESULTS

Of the 116 patients with subclinical hyperthyroidism, 88 were women and 28 were men. They ranged in age from 19 to 98 years (mean=55 years). The causes of hyperthyroidism were as follows: Graves disease, 15 (13%); silent thyroiditis, 26 (22%); toxic multinodular goiter, 15 (13%); and toxic thyroid nodule, 3 (3%). Because of incomplete clinical and laboratory data, the etiology of subclinical hyperthyroidism could not be accurately assessed in 57 (49%) patients. Therefore, we classified all patients based on clinical examination and/or radionuclide imaging. The nonnodular group consisted of patients with normal-sized or diffusely enlarged thyroid glands; the nodular group was composed of patients with thyroid nodules, as documented by clinical examination or thyroid scintigraphy. Ninety-eight patients had normal-sized or diffusely enlarged thyroid glands; 18 had nodular thyroid glands. The duration of follow-up was 6 months to 6.5 years (median, 3.2 years).

Comparison of clinical status during follow-up of patients in both groups is displayed in Figure 1. Four (4%) of the patients in the nonnodular group and 7 (39%) of the patients in the nodular group were treated for hyperthyroidism (P=<.001). The treatments were as follows: antithyroid drug therapy, 6; radioactive I-131, 4; and antithyroid drug followed by radioac-

tive I-131 and metoprolol,1. The reasons for therapy were as follows: development of hyperthyroid symptoms, 6; elevated FT_4, 2; osteoporosis and goiter, 1; and clinician's decision, 2. Fifty-nine percent of nonnodular patients reverted to normal TSH levels without therapy, compared to only 17% of nodular patients ($P = <.001$; Figure 1).

Atrial fibrillation was detected before or at the time of diagnosis of subclinical hyperthyroidism in 8 (8%) non-nodular patients and developed after the diagnosis of subclinical hyperthyroidism in 3 (17%) nodular patients ($P = .373$).

Thirty patients had initial TSH values of <0.1 µIU/mL; 86 patients had initial TSH concentrations between 0.1 and 0.39 µIU/mL. TSH levels reverted to normal in 16 (53%) patients with TSH levels <0.1 µIU/mL; 5 (17%) received antithyroid drug treatment (Figure 2). Thyrotropin reverted to normal in 45 (52%) patients with initial TSH levels between 0.1 and 0.39 µIU/mL; 6 (7%) of these received antithyroid drug treatment ($P = .044$; Figure 2). Atrial fibrillation was present in 3 (10%) patients with initial TSH levels <0.1 µIU/mL and 8 (9%) patients with TSH levels between 0.1 and 0.39 µIU/mL ($P = .999$).

Seventy-two patients were <65 years; 44 patients were ≥65 years old. Of the younger group, 6 (8%) received antithyroid therapy, whereas 5 (11%) patients >65 years were treated; (Figure 3). Thyrotropin reverted to normal in 40 (56%) patients <65 years of age and 21 (48%) older patients, respectively ($P = .435$). Atrial fibrillation was present only in patients 65 years of age or older.

DISCUSSION

The frequency in which subclinical hyperthyroidism progresses to overt thyrotoxicosis is uncertain[1,2] but it has been reported to range from 2% to 45% per year.[3] The progression may depend on the cause of endogenous hyperthyroidism,[3-6] the initial serum TSH concentration,[7-9] or the age of the patient.[5] Our study indicates that subclinical hyperthyroidism associated with nodular thyroid glands frequently required antithyroid drug treatment, whereas only 4% of patients with normal-sized or diffusely enlarged thyroid glands were treated. Thyrotropin levels reverted to normal without treatment in only 17% of patients with nodular thyroid glands, in contrast to normalization of TSH in 59% of patients without thyroid nodules (Figure 1). We did not find differences in the clinical outcome related to initial TSH levels (Figure 2) or age (Figure 3).

Previous studies have examined the natural history of subclinical hyperthyroidism. In a study by Sawin et al, persons >60 years of age with TSH levels <0.1 µIU/mL were followed for 4 years.[10] Only 6 of 50 patients developed overt hyperthyroidism during the follow-up period.

During 4 to 12 months of observation, Stott et al noted that TSH reverted to normal in 7 of 15 patients with subclinical hyperthyroidism.[11] Although thyroid hormone concentrations rose above normal in 4 patients, only 2 were treated.

Tenerz et al reported 33 elderly patients with subclinical hyperthyroidism had a 68% prevalence of multinodular goiter, whereas matched controls had a 29% prevalence.[3] The patients were followed for 2 years. Serum TSH levels remained low or borderline low in 17 patients and reverted to normal in 4. Patients with subclinical hyperthyroidism were more likely than control subjects to develop overt hyperthyroidism.[3] Twelve patients were treated for goiter or hyperthyroidism during the 2-year follow-up period.

Woeber retrospectively reviewed 16 patients with subclinical hyperthyroidism followed for 11 to 36 months.[4] TSH returned to normal in 5 of 7 patients with subclinical Graves disease, but remained abnormal in all 9 patients with multinodular goiter. One of the patients with Graves disease and none of the patients with multinodular goiter progressed to overt hyperthyroidism.

Recently, Schouten et al determined that the etiology of subclinical hyperthyroidism is the major factor influencing the progression to overt hyperthyroidism.[6] On the basis of clinical evaluation and thyroid scintigraphy, they identified and followed for 5 years 12 patients with subclinical Graves disease, 70 with multinodular goiter, and 14 with autonomous thyroid nodules. Progression to overt hyperthyroidism occurred in 8%, 16%, 21%, and 26% at 1, 2, 3, and 5 years, respectively. During the 5 years of follow-up, the progression to overt hyperthyroidism was 9% for the group with subclinical Graves disease, 21% for 3 with multinodular goiter, and 61% for those with autonomous nodules.[6]

Our findings are consistent with those of Woeber[4] and Schouten.[6] In contrast, Rosario noted patients with subclinical Graves disease who were <65 years of age progressed to overt hyperthyroidism 40% of the time, whereas only 20% of patients <65 years of age with subclinical hyperthyroidism due to nodular thyroid disease progressed to overt thyrotoxicosis.[5] Serum TSH returned to normal in 13% of patients with Graves disease and 20% of patients with nodular disease.

In a 12-month follow-up study of 66 patients with subclinical hyperthyroidism, Parle et al reported that serum TSH reverted to normal in 38 of 50 patients with subnormal but detectable TSH levels, but remained subnormal in 14 of 16 patients with undetectable serum TSH concentrations.[7] Only 1 patient progressed to overt hyperthyroidism. In a retrospective study of 75 subclinical hyperthyroid patients, Diez and Iglesias found that 34 (45.3%) developed overt hyperthyroidism and 15 (20%) reverted to normal TSH levels.[8] Eighty percent of the

study population had toxic multinodular goiter, 10% had toxic nodules, and 5% had Graves disease. The degree of TSH suppression was a significant factor for progression to overt hyperthyroidism. Patients with TSH levels <0.1 µIU/mL had the highest probability of progression to overt hyperthyroidism.[8]

In a recent prospective study, Rosario followed 102 women with a median age of 68 years who had TSH levels between 0.1 and 0.4 µIU/mL for 12 to 70 weeks.[9] Seven patients had Graves disease, 91 had nodular disease, and 4 had subclinical hyperthyroidism without a defined cause. Seven patients were treated for overt hyperthyroidism or progressive abnormalities of thyroid function tests. TSH levels in 24 women reverted to normal. Subclinical hyperthyroidism with TSH levels remaining between 0.1 and 0.4 µIU/mL persisted in 71 patients, 4 of whom were treated because of the development of atrial fibrillation or heart disease. Rosario concluded that elderly patients with endogenous subclinical hyperthyroidism who had TSH levels between 0.1 and 0.4 µIU/mL progressed to overt hyperthyroidism at a low rate (approximately 1% per year).[9] He further concluded that although spontaneous normalization of TSH may occur, persistence of subclinical hyperthyroidism was the most likely outcome. In our study, initial TSH levels did not predict overt hyperthyroidism.

Vadiveloo et al used record-linkage technology to retrospectively identify 2024 patients with subclinical hyperthyroidism.[12] At 2, 5, and 7 years after diagnosis, 81.8%, 67.5%, and 63%, respectively, remained subclinically hyperthyroid. Only 0.5%-0.7% of patients developed overt hyperthyroidism at the 2-, 5-, and 7-year observation periods. Seventeen percent, 31.5%, and 35.6%, respectively, of patients reverted to normal TSH levels at the 3 observation periods. Reversion to normal thyroid function was most common in subclinical hyperthyroid patients with TSH levels between 0.1 and 0.4 µIU/mL. The authors concluded that very few patients developed overt hyperthyroidism; more reverted to normal thyroid function, but many remained subclinically hyperthyroid.

The frequency of atrial fibrillation is increased in patients with subclinical hyperthyroidism[1,2] Sawin et al studied people >60 years of age for 10 years.[13] The authors noted a relative risk of atrial fibrillation of 3.1 among individuals with TSH levels <0.1 µIU/mL and a relative risk of 1.6 for people with TSH levels between 0.1 and 0.4 µIU/mL. The frequency of atrial fibrillation increases with age in euthyroid and hyperthyroid patients. In our study, atrial fibrillation was present before or at the time of diagnosis of subclinical hyperthyroidism in 8 patients and developed during observation in 3 additional patients. All 11 patients with atrial fibrillation were 65 years of age or older, which is 9% in this group. Prevalence of atrial fibrillation in euthyroid patients is 1.7% in women and 3% in men.[14]

CONCLUSIONS

Although the retrospective nature of our relatively small study limited the completeness of clinical and laboratory data and prevented an accurate determination of the cause and indication for treatment of subclinical hyperthyroidism, we believe the following conclusions are warranted: most patients with subclinical hyperthyroidism associated with normal-sized or diffuse thyroid enlargement rarely progress to overt hyperthyroidism and can be followed safely. On the other hand, patients with subclinical hyperthyroidism associated with thyroid nodules should have thyroid scintigraphy performed to document the cause of their thyroid dysfunction and should be strongly considered for treatment. All patients with subclinical hyperthyroidism should be followed carefully regardless of the initial TSH level. Finally, patients >65 years of age should be carefully observed for the development of atrial fibrillation.

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Hyperlexia III: Separating 'Autistic-like' Behaviors from Autistic Disorder; Assessing Children who Read Early or Speak Late

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ABSTRACT

Three conditions—Hyperlexia (children who read early), Einstein syndrome (children who speak late), and "Blindisms" (in children with impaired vision)—can present with "autistic-like" symptoms, traits, and behaviors that need to be differentiated from autistic disorder. Careful attention to that critical difference has important epidemiologic, etiologic, treatment, and outcome implications. This paper describes these conditions, makes suggestions for proper identification that can prevent unnecessary worry and distress for parents and other caregivers, and suggests appropriate management.

INTRODUCTION

With the current emphasis on early intervention in autistic spectrum disorder, there is a risk of clinicians failing to properly identify and separate out "autistic-like" symptoms and behaviors from autistic disorder itself in certain conditions. In failing to make that critical distinction, a diagnosis of "autism" can be erroneously and prematurely applied to children, leading to unnecessary worry and distress for parents or other caregivers. Hyperlexia may have "autistic-like" traits and behaviors that can masquerade as autistic disorder; the same is true of children who speak late or are blind. This paper describes those conditions and makes suggestions for proper identification that can lead to appropriate management.

Children Who Read Early—Hyperlexia and Its Sub-Types

In my over 40 years of research regarding savant syndrome, I receive numerous inquiries from parents regarding the presence and implications of savant-like behaviors in their children, adolescents, or adults. Most of these come through the very active www.savant-syndrome.com website, that I maintain through the support of the Wisconsin Medical Society and Foundation. Occasionally these behaviors present as a rather startling precocious ability in very young children to read words coupled with an intense fascination with letters or numbers. In spite of this intense preoccupation and ability with words, there are significant problems in understanding verbal language. Comprehension of that which is masterfully read is often poor, and thinking is concrete and literal. There is difficulty with, and paucity of, abstract thinking. There may be some behaviors and symptoms commonly associated with autism spectrum disorders as well, including echolalia (repeating rather than initiating conversation), pronoun reversals, intense need to keep routines (obsession with sameness), auditory or other sensory hypersensitivity, specific intense fears, strong auditory and visual memory, and selective listening with the appearance of suspected deafness.

This combination of precocious reading skills accompanied by significant problems with learning and language is called hyperlexia.

The literature on hyperlexia is quite scant, appearing only as recently as 1967.[1] Some affected children, most of whom learned to read before age 5 with little or no training, have this precocious reading ability combined with language difficulties and display significant difficulty in social relationships. Many come to speech and language disorder clinics such as The Center for Speech and Language Disorders in Elmhurst, Illinois, which has special expertise in the diagnosis and treatment of hyperlexia, with a variety of diagnoses including "autism, behavior disorder, language disorders or giftedness. The precocious reading ability is seen often as rote learning, splinter skills, or savant idiosyncrasy."[2]

By the time parents of hyperlexic children send their inquiry

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CME available. See page 287 for more information.

to the savantsyndrome.com website, their children often have gone through numerous evaluations, with various confusing and contradictory diagnoses applied including autistic disorder, pervasive developmental disorder (PDD), Asperger's disorder, attention deficit disorder (ADD), or language disorder. In other instances, there is no diagnosis applied except "precociousness." Controversy exists as to whether hyperlexia is related to a serious developmental disorder such as autism or a distinct speech or language disorder, or, in some instances, simply advanced word recognition skills in a neurotypically developing child.

The literature to-date does not provide a great deal of help for making the distinction between hyperlexia being an autistic/PDD spectrum disorder, or a separate, distinct language disorder. Importantly, though, it appears that in the latter instance, the prognosis overall is quite good. According to Kupperman and her coworkers at the Center for Speech and Language Disorders clinic, when children with hyperlexia were first seen at the clinic at age 2 or 2½, they had difficulty understanding language. They may have used a few words, but they often they were echolalic. Their behavior in some ways looked autistic. However, on follow-up some of these children emerged out of that autism, although some retained some aloofness or antisocial or oppositional behaviors. But over time, the aloneness and self-stimulating behaviors decreased dramatically as language comprehension and expressive language improved. By the time many of the hyperlexic children were in 1st or 2nd grade, many of the "autistic" behaviors had diminished and, while remaining aloof, the children had begun to socialize more.[2] In short, they emerged significantly from their "autism" because it was not autistic disorder at all.

A 1999 article by Nation provides a comprehensive review of the literature to that date.[3] One section of the article examines the relationship of hyperlexia to developmental disorders such as autism. The author concludes that hyperlexia, while present in some children with autistic disorder, is not specific to autistic disorder or confined to that condition. Instead, hyperlexia can be seen in nonautistic persons, many of whom do have transient, autistic-like symptoms and behaviors.

Based on cases that continue to come to my attention, it has been my experience that hyperlexia needs to be subdivided into 3 distinct categories: type I, type II, and type III. In so doing, the often-expressed view that hyperlexia is, in all cases, a form of autism can be properly dispelled and prognoses appropriately applied, much to the relief of many concerned and distressed parents.

Hyperlexia, Type I

Children who fall into the hyperlexia, type I category are very bright, normal (neurotypical) children who simply read early, to the amazement of their families and teachers. Often one or both parents have read frequently and patiently to their children. Very early, the child begins to "read" the book—this is actually rather prolific memorization of the book triggered by the words and pictures on the pages. Soon, however, the child is actually reading the words in the book, rather than just memorizing them, and that reading ability can then be transferred to other books. The child is reading at a 1st- or 2nd-grade level in preschool, kindergarten, or even earlier. At some point, most of the other children in the class catch up as they begin to read.

This group of hyperlexic children are early, or precocious readers. They are bright, neurotypical children who happen to read early and show no signs of autistic-like behaviors.

Case Example 1

JT's mother read regularly to her children at nap time and bedtime. At age 3, JT would watch her mother's lips intently as she read "Little Black, The Pony" to her. Then one day JT read the book to her mother instead of the other way around. The father was skeptical, and indicated JT had probably just "memorized" the book. Not so. Mother gave JT a newspaper article she had never seen before, and JT read it perfectly.

At nursery school, JT astonished her teachers as she read to her classmates. With formal testing, JT was reading at a 6th grade level at age 3 with full comprehension ability and otherwise neurotypical functioning. Eventually, JT's classmates caught up with her reading ability. But her advanced reading skills continued to serve her well. She went on to become a successful attorney and mother who now reads regularly to her own children.

Case Example 2

LM, now 34, began to read shortly before age 3. She was obsessed with words and letters and was never without a book. She pointed out signs and other lettering everywhere and pointed out spelling errors and typos wherever they occurred. While perhaps not understanding entirely what she was reading, the enjoyment she got from reading was what she called the "music of the language." She would sometimes begin reading in the middle of a book; it didn't really matter. Reading was soothing, no matter the story.

LM was good at math and had musical talent as well, including perfect pitch. Psychological testing was carried out to see if LM was a child prodigy. She said, "I was not, but at the end of it was proclaimed 'normal'." Social awkwardness was a problem as a child, and she had few friends.

LM's family immigrated to the United States when she was 13. She was enrolled in a private school through a scholarship and, without any formal instruction in English, became fluent

in English within that first year. Following high school, LM completed a Master's degree in engineering, obtained a law degree, and is now a patent attorney at a large law firm. Her social skills have largely normalized. LM finds her advanced reading skills continue and said they are incredibly useful in her profession. Her memory for verbatim sketches of text is very useful in legal research. Her colleagues admire her ability to spot typos at a glance, and her very rapid reading ability continues to be an asset in her work.

LM hesitates to label her early reading ability a disorder at all. She feels, instead, her ability was an asset, not a liability, and certainly not a "disorder." She said, "I was fortunate to have grown up when that diagnosis did not exist. The only label that my parents even thought of was 'gifted'."

Others, myself included, share that hesitation to label what I refer to as hyperlexia I as "hyperlexia" at all, lest it be considered a disorder in otherwise neurotypical children. In recent years, the term hyperlexia—early reading ability—has been too often mistakenly identified as being a "splinter skill" in children with autism, which, in most instances it is not. I have received messages from adults who wrote to tell me they were in the hyperlexic I category as children and grew up perfectly normally with no lingering residuals of any autistic-like traits or behaviors.

In short, hyperlexia I is not a disorder; it requires no treatment. Rather it is a very interesting phenomenon in otherwise usually very bright, neurotypical children who startle their parents and others with precocious reading ability. While peers eventually catch up in reading skills, hyperlexia I bodes well for future academic success in those children with this unusual ability.

Hyperlexia, Type II

Children in the type II category have hyperlexia as a splinter skill as part of an autistic spectrum disorder. They read voraciously, usually with astonishing memory for what they read, and often have other memorization abilities, sometimes linked with number or calendar calculating skills. These splinter skills are seen along with the characteristic language, social, and behavioral symptoms seen in autistic spectrum disorders. They usually carry a diagnosis of autistic disorder, Asperger's disorder or pervasive developmental disorder (PPD/NOS). These cases include the several subtypes of autistic disorder such as classic early infantile autism, early onset autism, or late onset, regressive autism.

In this group, it is the hyperlexia as a splinter skill that raises the question of savant syndrome. But for even those for whom the diagnosis of autism spectrum disorder is appropriate, the precocious reading and decoding abilities can be used as a tool to support the development of language and reading comprehension, language expression, and social skills. Clinical presentation, course of illness, and prognosis are those seen in autistic spectrum disorders.

Hyperlexia, Type III

Hyperlexia III is a less frequently recognized form of hyperlexia. It is not an autistic spectrum disorder (ASD), even though there are some autistic-like traits and behaviors that gradually fade as the child gets older.

These children read early, often show striking memorization abilities, and sometimes have precocious abilities in other areas as well. They may show unusual sensory sensitivity, echolalia, pronoun reversals, intense need for sameness and resistance to change, specific fears or phobias, have lining/stacking rituals, and/or strong visual and auditory memory. Unlike children with ASD, however, they are often very outgoing and affectionate with family, even though reserved and distant with peers and would-be playmates. They do make eye contact and can be very interactive with persons close to them. These children seem quite bright, inquisitive, and precocious in some areas overall. Reading and memorization are conspicuous and often quite amazing. There may other autistic-like behaviors as well. But over time, they fade, and these children are then quite typical for their age. The prognosis for these children is excellent as they outgrow the "autism" they never had.

Case Example 1

A mother wrote: "Reading the summary on your website is like reading the description of my daughter in every way. She was a late talker, socially avoidant with those she didn't know well, and began reading at age 2 ½ or so (it's hard for me to tell when she started, as I assumed she was memorizing books until this point). In your words, she was 'autistic-like' but the diagnosis never seemed right on a number of measures. She was diagnosed with autism a few months before she turned 3, but it never quite fit. After 15 months of interventions, she is now a normal (whatever that means) 4½ year old, and the consensus is that she was misdiagnosed. That said, she continues to display a number of precocious skills (reading, math, spatial skills, expressive language, etc) and, while not delayed in any measurable sense, she is also an unusual child with respect to social relationships (precocious these days), sensory issues, and activity level."

This mother indicated that while she was "relieved that autism is no longer an issue," she was having difficulty making educational choices for her daughter, including whether to send her to kindergarten early based on her advanced academic functioning (generally at a 2nd grade level) or to hold her back a year because her social and emotional skills while no longer delayed were not entirely consonant, as yet, with her academic abilities.

Case Example 2

Another mother sent me a video of her son, NS, reciting the alphabet at age 23 months. He "sees letters and numbers everywhere and spells out the names of the stores."

NS was given a "clear" diagnosis of autism by a psychologist after referral by a neurologist when the child was 12 months old because he never pointed, clapped, or waved. However, before he turned 2, NS had about 100 words, and by his 2nd birthday, he was putting 2 words together and "was doing great and was gaining more and more skills every month. He was happy and loved to learn," said his mother. In spite of the diagnosis of autism, NS was communicating well at age 2, and while content playing alone, he did copy and imitate other children and especially enjoyed older children ages 4-6. He would give his family plentiful hugs and kisses and knew all of his colors.

At that point, his mother wrote, "Many people who meet NS—and I tell them he has autism—are surprised, I think, because for the most part he is engaged and social. He has done well with the ABA (Applied Behavioral Analysis therapy). The fascination with the letters and numbers is strange, however."

About 6 months later, I received a follow-up on NS from his mother: "I wanted to thank you for your words of encouragement. You were right. NS is doing very well. He has caught up and is at age level for his language. He continues to be VERY social and affectionate. He still loves letters and numbers. His skills have increased, and at age 2½ years he counts and recognizes up to 40 and can tell you what starts with the letter 'b', 'a', 'z' and so on. He is mimic reading also. He doesn't know how to read, but for example will read 'b…l…u…e' and then say 'Yes, it's blue.' He is social, however he doesn't do much pretend play. He loves to play with his cousins, run around the house, go to the park and play with other kids. From my account right now, I have a regular 2 year old who had some special extras!!"

Case Example 3

GM was 5 years old when his mother first wrote to me in 2002. "GM was hyperlexic as a child. He showed autistic-like symptoms early on, but as language emerged, they have all but disappeared. He still struggles with vocabulary and usage, but thankfully he is a motivated child who is trying so hard to develop coping mechanisms to manage this unique learning style. As you know, there is much debate about hyperlexia and into which diagnostic category it falls. You have outlined them very well, I think. It was a long and difficult road for me as a mother trying to get a handle on things. I wish I had seen the article sooner."

I received an 8-year follow-up from GM's mother in 2010. GM was then 13½ "and doing exceptionally well." At that time, GM was an A/B student. He was "on the quiet side until he was comfortable." He had no sensory issues and did fine with friends and when in groups. "Earning a black belt in tae kwon do helped with confidence on many fronts. Skills-wise GM is a musical whiz. He has what you referred to once as super-abilities. He took classical piano for 5 years and played beautiful music, but the rock star in him loves drums. Once he discovered percussion, you'd think he had been playing them forever. His talent is innate."

"GM knows he is hyperlexic. Sometimes when there is a big group talking all at once he has difficulty following the chatter. He experiences the same when there is a lot of unfamiliar information to digest in certain subjects like history and science. That said, he copes very well and is exceptionally comfortable asking for help or clarity. He is the sweetest, most thoughtful kid. He has a very kind heart that melts mine. I couldn't be more pleased with his management of hyperlexia. He undoubtedly falls into the 3rd group you described. Though the early years were very challenging and often lonely, I treasure his leaps and tenacity. He is my hero."

Case Example 4

When AB was 2.3 years old, he was diagnosed by a speech therapist as having PDD-NOS in that he was reading sight words but had very little pragmatic language and delayed social skills. His parents took him to 2 developmental pediatricians, both of whom felt that while AB did have many autistic-like flags—poor eye contact, expressive/receptive language delays, lining/stacking behaviors, under-sensitivity to pain, and early reading—he did not fit the PDD-NOS clinical picture.

His mother recently wrote "that through whatever research I could find, your type III hyperlexia seemed like the best fit description of AB—and gave me some optimism. Now a year later, with the help of speech therapy and a small preschool for kids with special needs, AB is speaking in full sentences, initiating conversations, developing pretend play, and is very engaged. His language is still out of sync with his reading ability—he's not quite there with question words, and I expect that he is still not quite at age level for expressive/receptive language, while he is easily reading at a 1st/2nd grade level. I am sure we will continue to face challenges, but it is truly remarkable how much he has changed now that his language has improved."

In subsequent correspondence, AB's mother listed some of the other autistic-like behaviors AB did show for a period of time: rituals and insistence on sameness, knew letters and numbers to 100 before he said 'mama', more interested in page numbers in a book or the color of the page than the pictures or the story, obsessed with letters and numbers, and atypical language development with a large collections of nouns by age 2 but not spontaneously combining words. At age 9 months, he carried his magnetic alphabet letters from one room to another,

always in the same (nonalphabetical) order, and at age 2 did 24-piece jigsaw puzzles in the same order each time.

AB's parents just had their first conference after AB had attended his new preschool. Mother reports that "socially, AB was described as 'the ring leader' and 'concerned about how all the kids are feeling' and 'adaptable'. "Ironically his language was rated higher than his gross motor skills (which are perfectly fine—he has never been in OT)."

Children who Talk Late

In his book *Late Talking Children*, Thomas Sowell pointed out how often autistic-like symptoms appeared in children with delayed speech in a group of 46 such children based on parental reports.[4] In a follow-up book 4 years later—*The Einstein Syndrome: Bright Children Who Talk Late*—Sowell wrote, "Many parents wrote to me to say they were astonished to read about things that seemed like an eye-witness description of their own child and their own family. One mother said that she got goose-bumps reading descriptions that fit her child and her family so closely, while other mothers have reported simply weeping as they read for the first time something that so obviously fitted their own puzzling child."[5] Sowell's experience with late-talking children thus mirrored my own findings with children who read early.

Sowell was careful to point out that in some cases, the diagnosis of ASD was correct, and delayed speech can, in certain cases, be a part of an ASD or other physical condition. But he also found that sometimes cases of delayed speech were being inappropriately diagnosed as autism by persons not particularly qualified to do so. Beyond that, "There are the experts specializing in autism. They are in one sense particularly well qualified for saying whether a given child does or does not fit this category. On the other hand, to some of the experts, 'autism' is just a label to be used for sake of expediency in getting government funding of help that the child needs on other grounds. Others are engaged in a campaign to downgrade the shock of the term by applying it widely."

The 2 books together summarize experience with the 46 original families plus a new group of 239 late-talking children. Some of those fit what Sowell describes as the Einstein syndrome—exceptionally bright but exceptionally late in beginning to speak—but he recommends careful professional evaluation for any child with delayed speech. He also found, based on correspondence with parents, that some children who speak late have transient autistic-like symptoms that faded over time in children in whom a diagnosis of autism had been prematurely and mistakenly applied. With that error came the same worry, concern, and pessimism in those families that some of the parents of hyperlexic III children were experiencing as expressed in correspondence with me.

Visual Impairment

Hyperlexia is not the only circumstance where a distinction between autism and autistic-like is critical; that same differential diagnosis is important in children who are visually impaired. Teachers and parents of visually impaired children often refer to what are called "blindisms" in such children. In a 1998 article, Ek, Ferrell, Jacobson, and Gillberg point out that "blindisms"—stereotypical movements, language problems, and certain other behaviors—are common in children with congenital or other types of blindness.[6] Hobson described the similarities in development during preschool age (3-4 years) between blind children and those with autism.[7] In both groups, impairments in symbolic play, confusion in the use of language, and stereotypes were frequent. Many of the autistic features observed in the young, blind child without cerebral damage disappeared with age. As the child acquired a better understanding of the surrounding world, and with the development of language, a basis for sharing experiences and feelings with other people developed. According to Hobson, "blindness seems to delay rather than prevent development in these respects."

In 2010, Hobson and Lee did an 8-year follow-up study on 9 congenitally blind and 7 sighted children who met formal diagnostic criteria for autism.[8] Follow-up of the 9 congenitally blind children with autism revealed that, in adolescence, only 1 still satisfied the criteria for the syndrome. In contrast, all of the 7 sighted autistic children did still meet the criteria for autism.

Autism, autistic symptoms, and blindisms are often confused with each other and may be difficult to separate in blind children. This distinction in visually impaired children, just as in children with hyperlexia, is critical if parents are to be spared unnecessary distress from a diagnosis improperly applied and, equally important, if the right course of treatment is to be applied to the right patient.

Other Conditions

The term "autistic-*like*" has it counterpart in other medical conditions. For example some patients on certain medications may have "Parkinson-*like*" side effects but do not have Parkinson's disease. In much the same way, some other central nervous system conditions—some transient—can produce "Alzheimer's-*like*" signs and symptoms but not be actual Alzheimer's disorder. Exceedingly careful history, observation, and examination is critical; it may be necessary to let the natural history of the disorder emerge before applying a definitive diagnosis or label that can have important, lasting consequences. Treatment can still be applied to target symptoms, but parents or others may be spared the unnecessary worry and fear that can accompany certain diagnoses.

CONCLUSION

The first step in treatment is to make the proper diagnosis; management follows.

When precocious reading ability and extraordinary fascination with words present in a very young child, especially when accompanied by other language or social problems that might suggest an autistic spectrum disorder, a comprehensive assessment by a knowledgeable professional or team familiar with the differential diagnosis of the various forms of hyperlexia is indicated. That same comprehensiveness and caution needs to be applied to children with delayed speech or visual impairment.

As with any disorder, the first step in treatment is to have the proper diagnosis made by a skilled clinician. In some cases, hyperlexia, for example, can be a splinter skill in a true diagnosis of autistic disorder. However, caution needs to be used before applying that diagnosis to children with hyperlexia as a presenting symptom. The need for that caution stems from the pervasive, mistaken notion that hyperlexia in a very young child is always linked to autism. When a diagnosis or label of autism is prematurely and erroneously applied to a child who may be more appropriately identified as having hyperlexia III, it produces much unwarranted stress, burden, and worry for parents and leads to mistaken predictions regarding prognosis.

The abundance of caution and watchful observation I recommend in children who read early, speak late, or have visual impairment does not preclude intervention and treatment while the "natural history" of the disorder separates out hyperlexia III, Einstein syndrome or blindisms from autistic disorder. Speech and language therapy, occupational therapy, and ABA to address the areas of speech and comprehension, sensory issues, social isolation and ritualistic behaviors, for example, can all help with the autistic-like symptoms, just as they do in those children with actual autistic disorder.

The abundance of caution works in the other direction as well. Just as there is risk in making "false positive" diagnoses of ASD in children who read early, speak late, or are visually impaired, there is also the risk of giving "false hope" in those instances where certain symptoms are a part of autistic spectrum disorder. My answer to both those risks: careful, comprehensive evaluation by skilled clinicians knowledgeable about ASD as well as hyperlexia III, Einstein syndrome, and blindisms. From such an informed consultation, equally informed intervention strategies will emerge, whatever the proper diagnosis.

From my correspondence with parents, I found that even those parents whose children did have ASD as the underlying disorder in which hyperlexia, delayed speech, or blindisms were the presenting symptoms also were helped, and relieved, when directed to knowledgeable treatment resources in their community. Hopefully, as the literature continues to evolve on hyperlexia, there will be more clarification regarding the classification of hyperlexia into its subgroups and, correspondingly, more information will be disseminated where it will become increasingly clear that delayed speech or blindisms can be autistic-like symptoms, rather than autism itself. Then even more resources will emerge for comprehensive evaluation and tailored treatment principles for those children, into whichever group or subgroup they belong.

The beginning of wisdom is to call things by their right names. There are vital distinctions between autistic-like symptoms and autistic disorder in children who read early, speak late, or have visual impairment. Careful attention to those critical differences has important epidemiologic, etiologic, treatment, and outcome implications.

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Quiz: Hyperlexia III: Separating 'Autistic-like' Behaviors from Autistic Disorder

EDUCATIONAL OBJECTIVES

1. To be able to properly identify and separate "autistic-like" symptoms from autistic spectrum disorder (ASD) in children who read early, speak late, or are blind.
2. To be able to provide examples of hyperlexia types I, II, and III for children who read early; Einstein syndrome for children who speak late; and "blindisms" for children who are severely visually impaired.
3. To understand implications for diagnosis, treatment, and outcome in each of these conditions compared to ASD.

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QUESTIONS

1. The presence of hyperlexia can be:
   - ❑ A. Evidence of a serious developmental disorder such as autism.
   - ❑ B. A distinct speech and language disorder
   - ❑ C. Advanced word recognition in a neurotypically developing child.
   - ❑ D. All of the above.

2. Hyperlexia, while present in some children with autistic disorder, is not always linked to that condition.
   - ❑ True
   - ❑ False

3. Which of the following is not true of the "Einstein syndrome"?
   - ❑ A. The presence of exceptional brightness in children who were late in learning to speak.
   - ❑ B. The presence of transient "autistic-like" symptoms that can mirror those of children who read early.
   - ❑ C. A clear link of the delayed speech to ASD.

4. "Blindisms"—stereotypical movements, language problems, and other behaviors similar to those seen in autistic children—can occur in some congenitally blind children. Which of the following is true?
   - ❑ A. These autistic features tend to disappear with age in blind children without cerebral damage.
   - ❑ B. These autistic features persist into adolescence and adults in these blind children just as they do with matched, sighted children with autism.

5. For children who read early or speak late, identify which of the following is/are true:
   - ❑ A.The first step is a comprehensive assessment by a knowledgeable multidisciplinary team to sort out autism from autistic-like conditions.
   - ❑ B. Whether the hyperlexia, Einstein syndrome or "blindisms" are part of an "autistic spectrum disorder"or a transient "autistic-like" condition, treatments typically associated with ASD may be indicated and effective for either condition.
   - ❑ C. Eventually, there is a significant difference in outcome between ASD and autistic-like conditions.
   - ❑ D. Eventually, there is no difference in outcome between ASD and autistic-like conditions.

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Acute Transient Sensorineural Hearing Loss Due to *Anaplasma phagocytophilum*

Princy Ghera, MD; Yusuf Kasirye, MD; Muhammad Waqas Choudhry, MD; Gene R. Shaw, MD; Victor S. Ejercito, MD

ABSTRACT

We report the case of a patient who presented with a 3-month history of random epistaxis and recent onset of acute hearing loss associated with fever, chills, and myalgias. Pure tone audiometry revealed bilateral sensorineural hearing loss. Complete blood cell count showed an abnormal neutrophil count of 700/uL (normal >1900/uL) and platelet count of 25 x 10^3/uL (normal >175 x 10^3/uL). Giemsa-stained peripheral blood smear revealed neutrophilic intracytoplasmic inclusion consistent with anaplasma morulae. Polymerase chain reaction confirmed *Anaplasma phagocytophilum.* The patient was treated with oral doxycycline, and, after 14 days of treatment, the hearing loss had improved markedly. Therefore, we concluded that the patient's acute transient bilateral sensorineural hearing loss was associated with anaplasmosis.

CLINICAL VIGNETTE

A 61-year-old woman with a past medical history significant for fibromyalgia presented with a 3-month history of random epistaxis and a 1-week history of acute onset hearing loss associated with fevers, chills, and generalized myalgias. She reported having a fever as high as 102º F at home. Her nose bleeds were nontraumatic, with no associated bleeding of the gums, hematuria, melana, or hematochezia. She described her sudden onset hearing loss as a sensation of ear "fullness" or "plugging" without any vestibular symptoms, otalgia, or ear discharge. Although her risk factor for a tickborne illness remained high, given that she was a resident of a rural area of Wisconsin with a home surrounded by woods and was involved in outdoor activities (ie, gardening, walking in woods, etc), she was uncertain as to whether she'd had any tick bites. She was taking cyclobenzaprine for muscle pain as needed, but denied any recent medication intake that could be ototoxic. She did have some mild sensorineural hearing loss evident on a prior audiogram, but without any associated symptoms in the past (Figure 1a).

On physical examination, there were no signs of petechiae, ecchymoses, or skin rash. The ears were normal on otoscopic examination. The patient's presentation warranted basic blood work including complete blood count (CBC), basic metabolic panel (MPB), erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), prothrombin time/International Normalized Ratio (PT/INR), and activated partial thromboplastin time (APTT). This revealed an elevated inflammatory marker—CRP at 19 mg/dL (normal <1 mg/dL), but normal ESR at 14 mm/hr (normal <17 mm/hr). Her CBC showed an absolute neutrophil count of 700/uL (normal >1900/uL), platelets 25 x 10^3/uL (normal >175 x 10^3/uL), and a normal hemoglobin. Pure tone audiometry was performed and revealed bilateral sensorineural hearing loss with a speech recognition threshold (SRT) in the right ear at 45 decibels and in the left ear at 40 decibels. A speech discrimination score of 84% and 80%, respectively, also was noted (Figure 1b). At this point, given the history and the abnormal studies, our differential diagnosis included acute leukemia, viral illness, cyclobenzaprine-associated drug reaction, tickborne illness, or retrocochlear lesion.

In the next tier of laboratory studies, a Giemsa-stained peripheral blood smear was performed and revealed neutrophilic intracytoplasmic inclusion consistent with an anaplasma morulae (Figure 2). Polymerase chain reaction (PCR) confirmed *Anaplasma phagocytophilum.* Further tests were negative for other tickborne infections. Given this positive finding, no further testing/imaging was pursued. The patient was started on oral doxycycline 100mg twice daily. Both laboratory values and the patient's symptoms began to improve within 2 to

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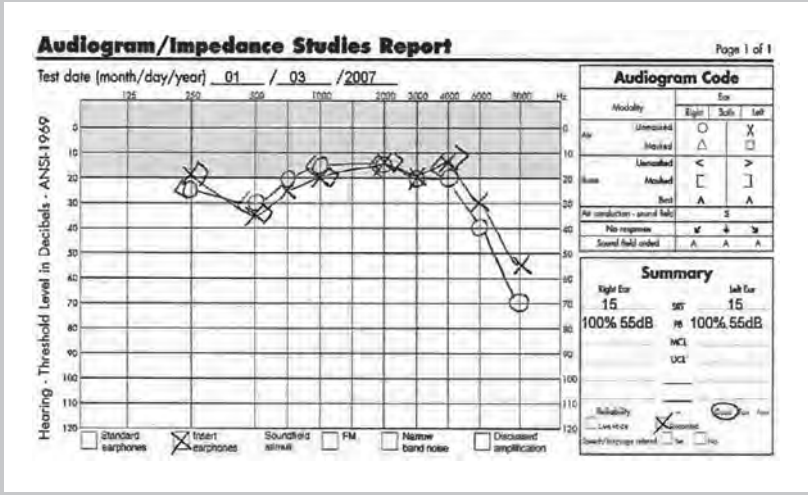
4 days of the antibiotic therapy, and she was discharged to home to complete a 14-day course of doxycycline. Her epistaxis was thought to be related to low platelets. The CBC normalized after 11 days of treatment. The neutrophil count was normal at 2000/uL (normal >1900/uL), and platelets were normal at 337 x 10^3/uL (normal >175 x 10^3/uL). Follow-up audiometry studies after 14 days of treatment revealed marked improvement of the patient's hearing loss, with the SRT in the right ear at 15 decibels and in the left ear at 20 decibels. Speech discrimination score also improved to 96% in both ears, similar to her audiology findings prior to infection (Figures 1a and 1c). It is most likely that our patient's acute transient bilateral sensorineural hearing loss was due to anaplasmosis, a feature already described in other members of the *rickettsiae* species. The improvement in the hearing loss with the treatment of her anaplasmosis further supports this impression.

DISCUSSION

Human granulocytic anaplasmosis (HGA) was first described in 1994 as a tickborne disease caused by an obligate, intracytoplasmic, gram-negative bacteria called *Anaplasma phagocytophilum.*[1,2] It belongs to the order *rickettsiales,* family *anaplasmataceae,* and genus *Anaplasma.* This family also includes genus *Ehrlichiae,* an organism with similar infectious characteristics.[3] As is common for organisms in the *rickettsiale* order, transmission is predominantly via tick bites; hence it is considered a tickborne bacterial infection. Ticks of the *Ixodes* species are the vectors for *Anaplasma phagocytophilum,* with other mammals acting as the reservoir.[1-3] Rickettsial diseases are zoonotic illnesses caused strictly by intracellular agents.[3]

HGA can present as either a self-limited febrile illness or a fulminant multisystemic disease. Disease severity correlates with extremes of age and comorbidities. The incubation period is about 7 to 21



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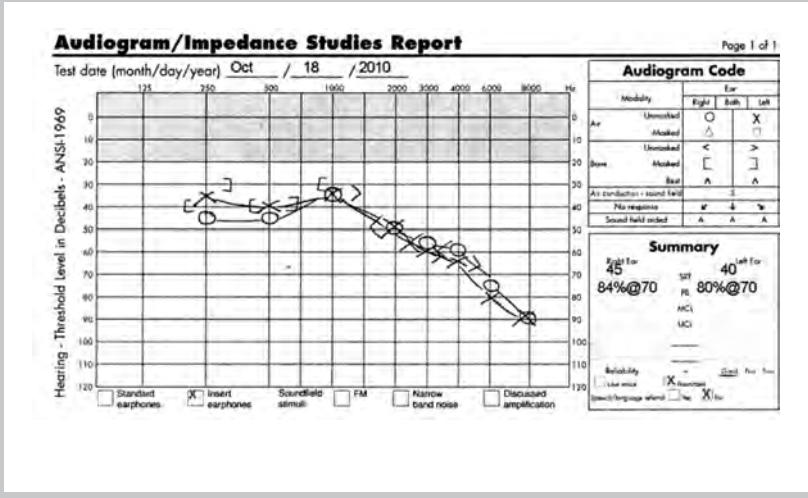

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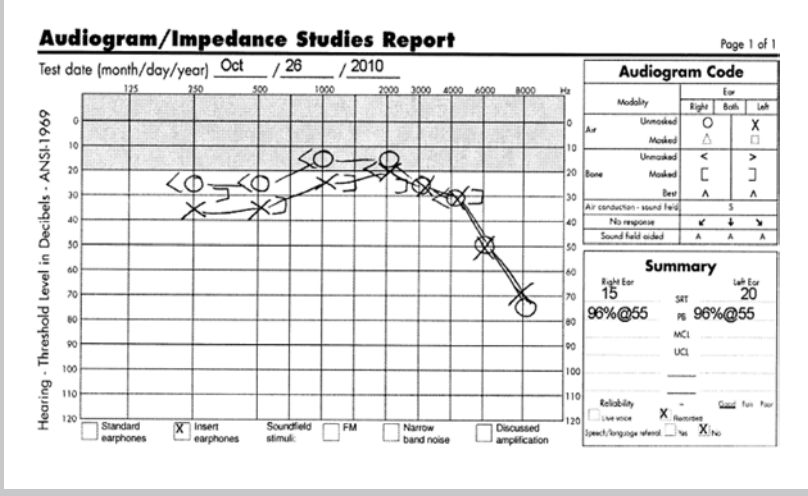

c.

Figure 1. Patient's audiogram (a) 3 years prior to the infection; (b) showing sensorineural hearing loss in bilateral ears with speech recognition; (c) showing improved hearing loss after treatment with doxycycline.

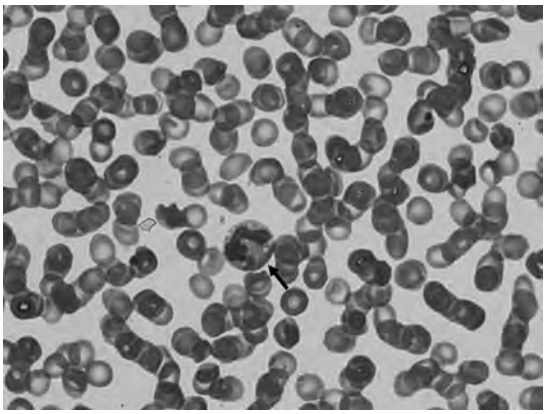

Figure 2. *Anaplasma* morulae seen as an intracytoplasmic inclusion in a neutrophil.

days, after which a patient develops fevers, chills, myalgia, and headache. Rare and unusual presentation features include acute sensorineural hearing loss (as was present in our patient), meningoencephalitis, or opportunistic infections due to severe neutropenia.[1,2] Severe headache is the most common neurological symptom. Neurological manifestations can occur in both the acute and subacute convalescent phases. Appearance of a rash strongly suggests the diagnosis of HGA.[3] Laboratory features include neutropenia, lymphopenia, thrombocytopenia, and elevated inflammatory markers (erythrocyte sedimentation rate and C-reactive protein).

Transient acute sensorineural hearing loss due to *rickettsiae* order is very rare.[4] A thorough search of the literature revealed only a few case reports of sensorineural hearing loss caused by the *rickettsiae* order.[3] Ehrlichiosis has been emerging more recently as the cause of neuromeningeal complications.[5] The exact mechanism remains unknown, although the propensity of these organisms to invade the central nervous system has raised the hypothesis that this presentation might be a result of eighth cranial nerve neuropathy. Another theory assumes that *Rickettsia* induce vasculitis with subsequent infarction of neural tissue by direct invasion of the endothelium involving the cochlear vasa vasorum or vasa nervosum of the cochlear nerve,[3,6] leading to sensorineural injury. This usually resolves after treatment of the primary disease.

Peripheral blood smear in infected patients usually shows an intracytoplasmic inclusion body. Confirmation of the diagnosis can be done by indirect fluorescent antibody test (IFA), PCR, or tissue immunochemical staining. Although IFA is the most sensitive test, antibodies only appear 2 to 3 weeks after onset of the disease. Although not readily available in all institutions, PCR is faster and more useful in confirming the diagnosis. However, beginning treatment based only on suspicion of the disease is recommended[1] because delay in treatment can result in permanent neurological sequelae and even death.[7] This also can be dependent on comorbid conditions such as age and chronic disease status.[6,7]

Tetracyclines are the first line of treatment. In patients where tetracyclines are contraindicated (allergic, pediatric, or pregnant), rifampin can be used. The latter can be combined with a cephalosporin if there is co-infection with other tickborne illnesses.[2]

Prior diagnosis of rickettsial-induced hearing loss has been made on the basis of IgM antibodies in the serum and reversal of hearing loss with tetracycline treatment.[3] In our patient, the lab work was consistent with anaplasmosis, the hearing loss improved with no other specific treatment, and there was no other possible explanation for the former. Therefore, we concluded that the patient's acute transient bilateral sensorineural hearing loss was associated with anaplasmosis.

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A Report of 2 Cases of Myopericarditis after Vaccinia Virus (Smallpox) Immunization

Umesh Sharma, MD, FACP; Tahir Tak, MD, PhD, FACC

ABSTRACT

Background: To counter the possibility of smallpox being used as a biological weapon, in 2002 the US government restarted a smallpox vaccination campaign. Myopericarditis is a possible cardiac complication of smallpox vaccination. We report 2 cases of vaccine-associated myopericarditis in military recruits who were treated at our facility. Chest pain, shortness of breath, and electrocardiographic changes of pericarditis, with a recent history of smallpox vaccination, were useful in making the diagnosis of probable post-vaccinial myopericarditis. Nonsteroidal, anti-inflammatory drugs (NSAIDs) were used to manage myopericarditis. Both patients had complete resolution of symptoms and electrocardiographic changes and subsequently returned to active duty.

Conclusion: Myopericarditis should be suspected when patients with recent history of smallpox vaccination present with chest pain or shortness of breath. Nonsteroidal anti-inflammatory drugs are useful in the management of post-vaccinial myopericarditis.

CASE REPORT 1

A 27-year-old male soldier presented with sudden, new onset, sharp, severe left chest pain radiating to his left arm that woke him from sleep. Because the pain lasted for a few hours, he was seen by an on-staff physician and given ibuprofen, which temporarily relieved the chest pain. He continued to have intermittent chest pain throughout the day and was seen at a local emergency department (ED) overnight. A 12-lead electrocardiogram (ECG) revealed sinus rhythm with diffuse ST segment elevations in most of the leads (Figure 1) with a troponin of 4.87 ng/ml and creatinine kinase of 511 units/L. He had received a smallpox vaccine 2 weeks prior to presentation. Two days prior, he also was diagnosed with vaccination-site cellulitis and was started on Bactrim, which was later switched to clindamycin. Thereafter, he developed a facial rash and recurrent chest pain, prompting him to visit the local ED. After myopericarditis was considered likely, the patient was transferred to our facility for further evaluation and treatment.

The patient did not have any past cardiac problems. He was a nonsmoker and did not consume alcohol or recreational drugs. His family history was negative for cardiovascular diseases.

Clinical examination revealed a facial rash, 1 cm-eschar at vaccination site with 0.75 cm-area of surrounding erythema without any active discharge (Figure 2). He had regular heart sounds with a rub and no murmur. The rest of his clinical examination was unremarkable. The patient was seen by cardiology, who advised that he continue on ibuprofen for presumed myopericarditis. He was started on cephalhexin for arm cellulitis. A transthoracic echocardiogram obtained the following day revealed normal left ventricular size and function, absence of regional wall motion abnormalities, pericardial thickening, and a tiny posterior pericardial effusion. The patient was monitored for 2 days on telemetry floor, where he remained asymptomatic and had resolution of his electrocardiographic changes. He was discharged home with ibuprofen. He continued to stay asymptomatic with no activity limitations and had a normal echocardiogram (ECHO) at a 4-week cardiology clinic follow-up visit.

CASE REPORT 2

A 41-year-old male soldier visited a local ED with a 2-day history of weakness, reduced exercise tolerance, night sweats, and mid-sternal, nonradiating, nonexertional, dull chest pain. The patient had regular heart sounds without murmurs or rub and no signs of congestive heart failure. ECG revealed diffuse ST segment elevations (Figure 3) with a troponin of 18 ng/ml. He underwent emergent cardiac catheterization for presumed ST elevation myocardial infarction revealing minimal (nonsignificant) coronary artery disease. He had received a smallpox vac-

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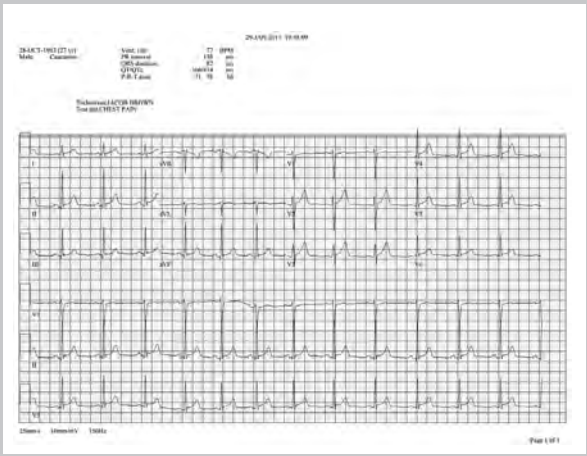

Figure 1. Twelve-lead ECG in Case #1.

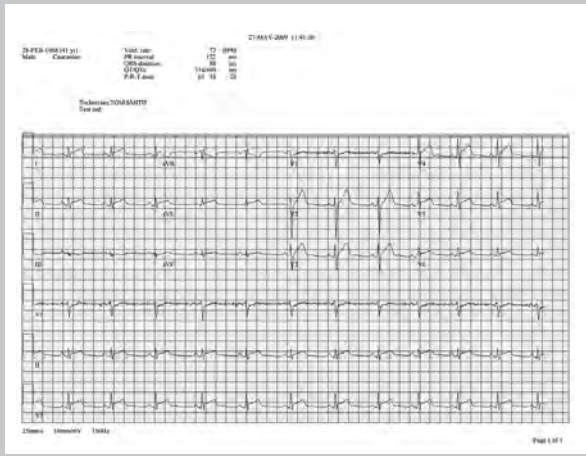

Figure 3. Twelve-lead ECG in Case #2.

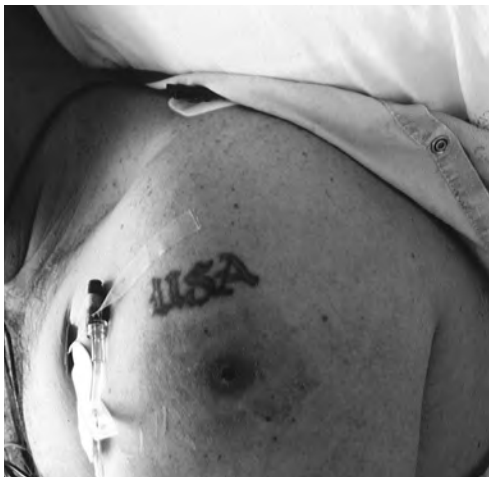

Figure 2. Eschar developing on left upper extremity 2 days post vaccination.

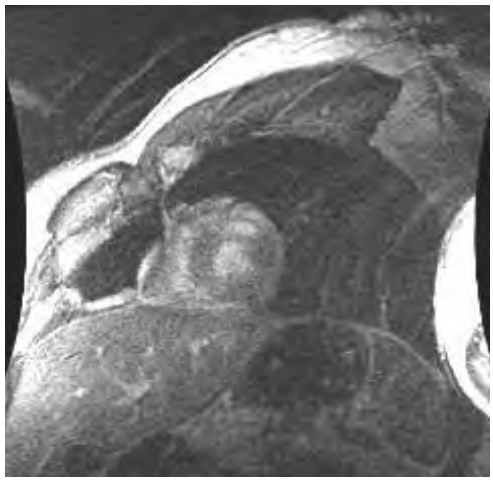

Figure 4. Image of cardiac magnetic resonance imaging (MRI) showing patchy and diffuse myocardial enhancement.

cination 10 days earlier; it was suspected that his symptoms were related to smallpox vaccine-related myopericarditis. He was monitored on telemetry and started on indomethacin. An echocardiogram revealed normal left ventricular ejection fraction with thick pericardium consistent with pericarditis. A cardiac magnetic resonance imaging (MRI) scan revealed patchy diffuse mid-myocardial enhancement consistent with myocarditis (Figure 4). His clinical condition improved in a couple of days. However, he had improved but persistent ST-segment elevations and was discharged home on indomethacin. At a 4-week cardiology clinic visit, the patient had a normal ECG and a satisfactory stress test with improvement in pericardial thickening on echocardiography. He subsequently returned to active duty.

DISCUSSION

Small pox is a devastating disease that is caused by the variola virus. It has been declared eradicated after an aggressive, widespread vaccination campaign in 1980. In the United States, routine childhood vaccinations were stopped in 1972; they were stopped worldwide in 1982.[1] However, the military did not stop all smallpox vaccinations until 1990.[2] In the last decade, the US military restarted a campaign of smallpox vaccination with vaccinia virus to counteract the threat of bioterrorism using smallpox.[3] More than 540,000 personnel received smallpox vaccines between December 2002 and June 2003.

As a result of these vaccines, there has been 1 case of encephalitis and 67 cases of acute myopericarditis with no clinical case of eczema vaccinatum, progressive vaccinia, or attributed

death.[2,4] In January 2003, voluntary smallpox vaccinations were restarted for health care and public health workers. In the first 2 months, among 25,645 civilians who received vaccine, 7 cardiac-related events, including 2 fatal ones, were reported. Smallpox vaccine-related myopericarditis has been reported among those receiving primary vaccination and revaccination.[5]

Smallpox vaccine is made from vaccinia, a live DNA virus that cross-protects against smallpox. Common side effects include local itching (60%), myalgia (21%), malaise (20%), headache (18%), lymphadenopathy (14%), bandage reaction (7.4%), generalized pruritus (5.5%), fever (5.3%), local rash (5.3%), and generalized rash (1.1%). Rare side effects include generalized vaccinia (80 per million), inadvertent self-inoculation (107 per million), vaccinia transfer to contacts (47 per million), acute myopericarditis (82 per million), and encephalitis (2.2 per million).[3] Other rare adverse effects include eczema vaccinatum, fetal vaccinia, ocular vaccinia, and, rarely, death. [2,3]

Contraindications to smallpox vaccination include history of atopic dermatitis or active skin conditions that disrupt the epidermis, pregnancy, immunosuppressed states, and age >50 years with cardiac and vascular disease.[1,2]

Myocarditis and pericarditis often occur together. The term myopericarditis is indicative of a predominately pericarditic syndrome with minor myocardial involvement. The most common viruses that are known to cause myopericarditis include Coxsackieviruses (especially Coxsackie B), cytomegalovirus, adenovirus, influenza virus, echovirus, parvovirus B19, and, rarely, post-smallpox vaccination.[4,5]

Clinical Presentation of Myopericarditis

The symptoms of myopericarditis are highly variable but usually include shortness of breath, chest pain, fever, and arrhythmias. A 2004 study by Eckart reviewed 67 cases of myopericarditis among 540,824 vaccinees within 30 days of vaccination.[6] Ninety-one percent of patients exhibited prodromal symptoms, 57.4% of patients exhibited fever and chills, 31.2% had myalgias and/or arthralgias, and 34.4% experienced headache, viral syndrome, and fatigue. A small group, 14.7%, did not have any symptoms besides chest pain. All patients presented with chest pain or substernal pressure.[6]

Sudden cardiac death also has been reported after vaccination, most likely caused by malignant arrhythmias due to dilated cardiomyopathy.[7] Myopericarditis may cause patients to present with symptoms and signs similar to acute coronary syndrome; however, they are more likely to have blunted increase and decrease of cardiac biomarkers and less likely to have regional wall motion abnormality on echocardiogram.[8] A 2007 study by Eckart showed that rates of cardiac ischemic events in the 30-day period following smallpox vaccination is similar to nonvaccinated military population (140.1 and 143.5 per 100,00 person-years, respectively).[9]

Table I. Criteria Used for Diagnosing Myopericarditis

Level of Suspicion	Description of Criteria
	Myocarditis
Suspected myocarditis	
	1. Symptoms (palpitations, chest pain, dyspnea)
	2. ECG abnormalities beyond normal variants, not documented previously (ST/T abnormality, paroxysmal supraventricular tachycardia, ventricular tachycardia, atrioventricular block, frequent atrial or ventricular ectopy) OR focal or diffuse depressed LV function of uncertain age by an imaging study
	3. Absence of evidence of any other likely cause
Probable myocarditis	
	1. Meets criteria of suspected myocarditis
	2. In addition, meets 1 of the following: elevated levels of cardiac enzymes (creatine kinase-MB fraction, troponin T or I) OR new onset depressed LV function on imaging consistent with myocarditis (MRI with gadolinium, gallium-67 scanning, anti-myosin antibody scanning)
Confirmed myocarditis	
	1. Histopathologic evidence of myocarditis by endomyocardial biopsy or an autopsy
	Pericarditis
Suspected pericarditis	
	1. Typical chest pain (made worse by supine position, improved with leaning forward, pleuritis, constant)
	2. No evidence of alternate cause of such pain
Probable pericarditis	
	1. Meets criteria of suspected pericarditis
	2. Has 1 or more of the following: pericardial friction run on auscultation, or ECG with diffuse ST-segment elevations of PR-segment depressions not previously documented, or Echocardiogram revealing an abnormal pericardial effusion
Confirmed pericarditis	
	1. Histopathologic evidence of pericardial inflammation in pericardial tissue from surgery or autopsy

Reproduced and adapted from CDC website, CDC. Update: Cardiac-related events during the civilian smallpox vaccination program—United States, 2003;52(21):492-496.[10]

Diagnosis of Myopericarditis

Criteria used for diagnosis of myopericarditis are summarized in Table 1.[10] Recent history of smallpox vaccination, ECG changes of myopericarditis, and elevated cardiac biomarkers are essential in diagnosis of myopericarditis. Echocardiogram is useful in assessing the left ventricular function and wall motion abnormalities, and in identifying a pericardial effusion or tamponade. Postgadolinium MRI show focal enhancement in acute myocarditis, but within a week the involvement is diffuse. These changes have a specificity and sensitivity of 100%.[11] Cardiac catheterization is indicated to rule out or diagnose isch-

emic heart disease. Endomyocardial biopsy is the gold standard, but it may not be useful due to the patchy nature of the disease; it also carries procedure-related risks.[1] Biopsy reveals patchy or diffuse myocytolysis and intense infiltration with inflammatory cellular products with no evidence of active vaccinia infection, suggesting immune-mediated inflammation.[5,6,12]

US military smallpox vaccination data revealed onset of vaccine-associated myopericarditis about 10.4 ± 3.6 days after vaccination with 57% incidence of ST-segment elevation and a mean troponin of 11.3 ± 22.7 ng/ml. Ninety-six percent of patients had normalization of ECHO and ECG findings around 32 weeks of follow-up.[6]

Treatment of Myopericarditis

Vaccinia-associated myopericarditis is inflammatory in nature; hence nonsteroidal anti-inflammatory drugs (NSAIDs) are used for symptom relief and usually given for 2 weeks.[6] Rest and avoidance of high-level exertion is advisable for 4 to 6 weeks. Complications like heart failure and arrhythmias need to be managed similar to heart failure/arrhythmias from any other cause. Steroids and immunosuppressive medications have been used in isolated case reports; however, their benefits have not been proven in case-controlled studies. Vaccinia immune globulin inhibits active viral replication and has been used in treatment of noncardiac complication of smallpox vaccine, but is not recommended for treatment of myopericarditis.[1]

CONCLUSION

Myopericarditis should be suspected when patients present with chest pain or shortness of breath within a month of receiving a smallpox vaccine. Chest pain, typical ECG changes, elevated cardiac biomarkers, and a recent history of smallpox vaccination are essential in diagnosis of myopericarditis. NSAIDs are useful in management of post-vaccinial myopericarditis. Most patients have complete resolutions of symptoms and ECG and ECHO changes, and have full functional recovery. Some authors suggest electively checking an ECG 10 to 14 days after vaccination especially for those vaccinees >40 years of age.[13]

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What Every Physician Needs to Know to Prepare for ICD-10

Penny Osmon, CHC, CPC, CPC-I, PCS

October 1, 2013, seems like a date in the far distant future, especially with all the other local, state and federal health initiatives already vying for limited practice resources. But the ICD-10 compliance date is not going to be extended, and it arguably brings the largest change to health care in more than 20 years. ICD-10 is not just an updated code set; it is the foundation for producing higher quality data for measuring quality, efficiency, and safety.

Physicians play an important role in the transition to ICD-10, and as the compliance deadline looms, they can't afford to delay implementation. Lack of compliance will mean a direct hit to their revenue cycle. But more than that, many benefits should be realized through the successful conversion to ICD-10.

ICD-9-CM was not created for developing reimbursement models and has been outgrown by new technology, evolving medical terminology, and changing medical practices in this century. For example, endoscopic procedures were not performed when ICD-9-CM was implemented in the 1970s, but today they are common. ICD-10-CM and ICD-10-PCS encompass more than 140,000 codes – a significant increase from the current set of about 17,000. If used correctly, ICD-10 should provide richer data to better measure and improve patient care. Understanding complications, tracking outcomes, and customizing disease management programs should be enhanced with the cleaner logic ICD-10 employs.

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Penny Osmon is Director of Educational Strategies for the Wisconsin Medical Society. She is a certified ICD-10 trainer and a founding member of Wisconsin's ICD-10 Partnership.

Physicians play an important role in the transition to ICD-10, and as the compliance deadline looms, they can't afford to delay implementation.

Start now

Planning now is the first and most critical step in the journey to October, 1, 2013. Ideally, a project team or steering committee to provide guidance and oversight for the overall transition project is already convened. If not, it should be soon. Key stakeholders should include at a minimum: clinical staff, administrative staff (billing and coding), senior leadership, and representatives from information technology, information systems, and finance. In a small clinic, this could be 1 or 2 people, and it will vary by practice size.

Impact analysis

The next step is a cross-organizational deep assessment typically performed through an impact analysis. This is accomplished by identifying every place a diagnosis code currently touches a physician's practice across people, processes, and technology. Knowing exactly how financial, clinical, and practice management systems work in the world of ICD-9 will be critical for a successful impact analysis. Another important element is the impact ICD-10 will have on workflows and systems, and a rigorous analysis will identify human, technology, and budget needs.

A potential gap area is the need to review physician documentation for specificity. With the increased granularity and detail ICD-10 provides, there is a need for more specific physician documentation. This does not necessarily mean more documentation; however, coding and other staff members may require aa more advanced understanding of anatomy and physiology and overall disease process to accurately report these codes. Code-set training will be required, and there will be a learning curve – even for the most experienced coder.

Performing an assessment of both written and electronic health record documentation today will determine education and training needs as well as potential topics for conversation with software vendors. All

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WMJ

Call for Papers Special Issue

The *WMJ* will publish a themed issue in June 2012 focusing on the use of clinical information systems as a method of integrating clinical medicine and public health. The United States is rapidly moving to use large public health data sets, electronic health records (EHRs), and Geographic Information Systems for surveillance of health problems such as influenza, chronic illness management, asthma and diabetes. At-risk populations in clinical care systems are among the areas addressed.

The journal encourages investigators who are using clinical information to potentially improve clinical care and stimulate innovative methods for approaching health problems to submit their work for consideration in this special issue. We are interested in method pieces that describe the use of clinical health systems for clinical care and research, and in completed work that has used clinical information systems to identify and manage problems or has addressed the challenges and opportunities in developing clinical data systems.

During the past five years, *WMJ* has published a great deal of information about health disparities, infectious disease, and access to care that has drawn on large public health data sets and contributions from clinical informatics and other sources.

With rapidly evolving tools such as clinical registries, whole-population EHRs, and health mapping becoming more prevalent, we would like to showcase how public health and clinical systems are using these tools to improve health.

If you have questions or would like more information, e-mail wmj@wismed.org.

Timeline:
Manuscript Deadline: March 1, 2012
Editorial Deadline: May 1, 2012
Publication: June 2012

Instructions for authors are available at www.wmjonline.org.

Visit www.wmjonline.org to learn more.

Concealed Carry: Best Practices After November 1, 2011

Thomas N. Shorter, JD; Tom O'Day, JD, Godfrey & Kahn, SC

Wisconsin Governor Scott Walker signed legislation on July 8, 2011 making Wisconsin the 49th state to allow licensed individuals to carry concealed weapons.[1] As of November 1, 2011, individuals who have obtained a license from the Wisconsin Department of Justice may legally carry a concealed weapon in Wisconsin.

The laws in a number of states, such as Texas, Michigan, South Carolina and Missouri, prohibit the carrying of concealed weapons in a health care facility. Wisconsin law does not. Wisconsin health care facilities, as well as other business, residential and non-residential property owners, must decide whether to permit or prohibit the carrying of concealed weapons on their premises (except in parts of a building, grounds, or land used as a parking facility, where individuals may carry weapons in their own personal vehicles).

Regardless of the facility's decision, it should take steps to ensure that its policy is clearly identified and properly enforced. The information below can help a facility reduce and manage the risk associated with its weapons policy.

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Unique considerations for the health care industry

There are a number of considerations and circumstances unique to health care facilities that may influence their decision to allow or prohibit carrying of concealed weapons. Examples include the routine presence of oxygen and other combustible materials at many health care facilities, the fact many visitors may be in a state of mind that could result in impaired judgment (eg, semi-conscious, heavily medicated, having just received extremely upsetting news regarding the status of their health), and the urgency of care situations, especially in emergency and urgent care facilities.

The decision to permit weapons: best practices

The Wisconsin Legislature provided that businesses and employers that permit individuals to carry concealed weapons are "immune from any liability arising from its decision."[2] The breadth of that immunity has been the subject of some debate. Nonetheless, even if the grant of immunity is so broad to cover most if not all incidents that happen when a concealed weapon is permitted, health care facilities should take basic steps to continue to ensure a safe workplace for their employees and visitors.

It is important to recognize that laws and ordinances prohibiting the discharge of a firearm or illegal use of a weapon are still valid. For example, if an individual who is permitted to carry a concealed weapon threatens others with that weapon, the facility should contact local law enforcement and, if available, in-house security staff to address the threatening behavior. Law enforcement also should be contacted if any individual carrying a concealed firearm is under the influence of an intoxicant, as this is a Class A misdemeanor punishable by 9 months in jail and/or a $10,000 fine.[3]

Perhaps the most difficult aspect of permitting concealed weapons is where and when the facility should draw the line with respect to an individual's access to his or her weapon. The Wisconsin Legislature granted immunity for property owners who permit weapons on their land or in their building; if even a single person is prohibited from carrying a concealed weapon on those premises, that immunity could be lost. This can create challenges for a facility. For example, a situation may arise in which an individual is under the influence of legally prescribed narcotics, is in an altered state of mind, and/or may be hallucinating and carrying a concealed weapon. In such a situation, the facility may have concerns about the safety of the individual, patients, visitors, and its staff. It is important that a facility that opts to allow concealed weapons consider scenarios like this and work with the facility's in-house counsel or a private attorney to determine its options. The attorney can help the facility weigh benefits and risks to determine the best option based on its unique considerations and characteristics and to develop related policies and procedures.

For example, one facility may determine it is appropriate for a designated and specially trained staff member to approach an individual and request, but not require, that

the individual not carry a weapon into the facility because of concerns that the individual may be in physical or mental state that makes carrying a weapon a safety concern for the facility, its staff, and visitors. Another facility may be concerned that such an act by the facility will increase its liability by acknowledging a potential safety issue that it may not be able to eliminate (ie, an individual chooses to carry a concealed weapon even after a conversation with a facility staff member requesting that he or she not do so) and/or create an obligation for the facility to screen all visitors and staff to determine if a safety risk exists. The variety of actions a facility can take, as well as the possible implications of such actions, reaffirm the value and importance of a facility working closely with its in-house counsel or a private attorney to determine the option(s) best suited for their facility and develop the necessary policies and procedures.

The decision to prohibit weapons: best practices

If a decision has been made by a facility to prohibit weapons, it should take steps to enforce that prohibition. The first step is to post signs notifying individuals that weapons are prohibited. This applies to both owned and leased buildings. These signs must, by statute, be at least 5 x 7 inches.[4] Many businesses have opted to include signs with a universal "no" symbol or a circle with a slash across a picture of a weapon or multiple weapons as these can be recognized by all cultures and languages.

A facility also should consider how emergency responders and health care workers should respond to an individual who may have a concealed weapon. Such workers should assume that every person in the facility has a weapon. Training health care professionals and other employees to understand their role in making patients and others aware of the prohibition on weapons, as well as the proper procedure for handling a situation where a violation of the policy is suspected or occurs, is a valuable investment of time.

Another step a facility should take if it decides to prohibit weapons is to implement a written policy for all employees. At a minimum, the policy should:

- Emphasize the facility's commitment to the health and safety of its employees.
- Explain the prohibition in terms of to whom it applies, to what weapons it applies, where it applies, and whether it applies to open carry as well as concealed carry of weapons.
- Define weapons to include all firearms (not just handguns) as well as any instrument or device that can cause bodily harm.
- Emphasize the prohibition in facility-owned or leased vehicles.
- Require employees to report any suspected violation of the policy to designated persons or positions such as building management, security staff, and human resources.
- Indicate that the facility will not retaliate against any employee who in good faith reports a suspected violation of the policy.
- Indicate that any violation of the policy will result in discipline, up to and including termination.

A facility that decides to prohibit weapons may want to consider contacting local law enforcement to ask how they plan to handle reports about individuals violating a company's weapons policy despite being notified of the policy via signage and verbal communication. Knowing and understanding the role local law enforcement will play will assist the facility as it refines policies and procedures and trains staff.

Conclusion

Health care facilities should evaluate whether they will permit or prohibit weapons in their facility and take reasonable steps, including but not limited to those noted above, to support that decision. Doing so will demonstrate the facility's compliance with the new law, as well as help the facility mitigate and manage any risk associated with its decision.

Additional information on the new concealed carry law, including sample signage, FAQs and links to other resources such as the Department of Justice's concealed carry law website, are available on the Wisconsin Medical Society's website (member log-in required). Those interested in additional education on this issue may register to listen to an archive of the *Concealed Carry in the Clinic* webinar offered by the Society. Registration includes webinar, access to the presentation materials, and a sample policy.

References

1. 2011 Wisconsin Act 35.

2. Wis. Stat. § 175.60(21).

3. Wis. Stat. § 941.20(1)(b).

4. Wis. Stat. § 943.13(2)(bm)1.

UW Tobacco Research and Intervention Center Making a Difference

Robert N. Golden, MD

The University of Wisconsin Center for Tobacco Research and Intervention (UW-CTRI) is a wonderful example of the power of prevention and public health approaches in addressing serious medical issues. The center is also the embodiment of the Wisconsin Idea, as it touches the lives of so many people and communities throughout Wisconsin (and beyond).

Michael Fiore, MD, MPH, MBA, founded UW-CTRI in 1992, based on an ambitious vision (and with rather modest resources): tackling the epidemic of tobacco-related illness. Today, UW-CTRI has gained international recognition as one of the leading authorities on tobacco addiction research and treatment.

One example of UW-CTRI's impact involves Dr Fiore's pioneering efforts, launched 20 years ago, to establish smoking status as a "vital sign." Today, thanks in part to those efforts, more than 80% of smokers across America report that they were asked about their tobacco use at their last clinic visit. Dr Fiore also chaired 3 federal panels that created the US Public Health Service Clinical Practice Guideline, Treating Tobacco Use and Dependence, in 1996, 2000, and 2008.

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Doctor Golden is the Robert Turell Professor in Medical Leadership, Dean of the School of Medicine and Public Health, and Vice Chancellor for Medical Affairs at the University of Wisconsin-Madison.

UW-CTRI has an enormous impact on tobacco dependence on a global scale, while also focusing on reducing the harms of tobacco use here at home. During the past 20 years, the center has made its research findings available to more than 20,000 Wisconsin clinicians and has provided cessation treatment services to more than 150,000 callers to the free Wisconsin Tobacco Quit Line. For years, UW-CTRI has conducted transdisciplinary research in "real-world" clinical settings across the Badger State, testing the latest counseling techniques, as well as several medications, to help patients quit smoking.

Notably, 2011 is proving to be a banner year for the program. UW-CTRI has competed successfully for 3 new grants, totaling more than $20 million in federal funding. Not only will this new funding boost the Wisconsin economy, but more importantly, it will help thousands of Wisconsinites from all walks of life avoid the leading preventable cause of disease and death—tobacco addiction. I would like to briefly highlight these new grants, and I hope you will share this information with your patients who use tobacco.

UW-CTRI has an enormous impact on tobacco dependence on a global scale, while also focusing on reducing the harms of tobacco use here at home.

State Medicaid Grant

The Centers for Medicare and Medicaid Services (CMS) awarded Wisconsin a 5-year, $9.2 million grant to help Medicaid recipients quit smoking through the Quit Line and the First Breath Program of the Wisconsin Women's Health Foundation. The grant, called Striving to Quit, aims to determine whether monetary incentives increase the rate at which Medicaid smokers engage in treatment and whether such incentives lead more smokers to quit. Adult BadgerCare Plus members who smoke and reside in south central and northeastern Wisconsin

will be referred to the Quit Line, and pregnant BadgerCare Plus members residing in southeastern and south central Wisconsin will work with First Breath health educators. The Wisconsin Department of Health Services will lead the grant; approximately $6 million of the funding will come to the School of Medicine and Public Health and UW-CTRI.

Wisconsin Smokers Health Study-2 (WSHS-2)

UW -CTRI was awarded a $10 million National Institutes of Health (NIH) grant to identify the best ways to help Wisconsin residents stop smoking while assessing the health outcomes of quitting vs continued smoking. The study extends the Wisconsin Smokers' Health Study (WSHS), launched in 2004, which demonstrated that smoking cessation affects nearly every aspect of a person's health. The new study will include potentially life-saving tests—including artery scans that can signal impending risk of a stroke or heart attack—free of charge to participants. James Stein, MD, of UW Preventive Cardiology, will join Dr Fiore and Tim Baker, PhD, of UW-CTRI, to lead the research. Participants also will get free coaching and medications to help them quit smoking. The project will recruit 600 new smokers from the Milwaukee and Madison areas in addition to the 900 continuing participants from the first WSHS.

Tobacco interventions for people living in poverty

Bruce Christiansen, PhD, and UW-CTRI received a $332,000 NIH grant to train staff at 4 Salvation Army centers in the greater Fox River Valley to help their clients who smoke. Research shows that the smoking rate among the homeless and other very poor segments of society is about twice the rate of other Americans. More than half of this population succumbs to diseases directly caused by their tobacco addiction. This grant removes barriers and facilitates quitting for this disadvantaged group. For example, the Salvation Army will make telephones available for smokers to immediately call the Quit Line while they are on-site. UW-CTRI will recruit about 140 smokers from area Salvation Army facilities. Motivational interviewing techniques will help participants recognize that it is in their best interest to quit smoking, and there will be free cessation services offered.

These new grants are powerful examples of how UW-CTRI embodies both the Wisconsin Idea and our transformation into a school of medicine and public health. Please consider sharing the information about these new programs within your community. With your support, UW-CTRI can continue to expand its 20-year tradition of making a difference in the health of Wisconsin.

What Every Physician Needs to Know to Prepare for ICD-10

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of this should be included in the budgeting process and will provide direction for timing of the implementation plan.

Establish a timeline

A solid implementation plan will include a detailed timeline for technology upgrades in all affected systems, education and training needs of all staff, updates to internal policies and procedures, review of all existing and new payer and vendor contracts, and more. Physicians preparing to purchase new technology (for example, electronic health records, financial software, or practice management software) should make sure vendor contracts include language that will support the transition to ICD-10. Also, it's important that the implementation plan take into account the need to maintain ICD-9 and ICD-10 simultaneously for a period of time.

The transition to ICD-10 may seem overwhelming, but it doesn't need to be if the process starts now. The Wisconsin Medical Society's website (www.wisconsinmedicalsociety.org/icd-10) provides numerous resources and learning opportunities to help ensure a smooth transition to ICD-10 for physician practices.

ICD-10 implementation ultimately will provide physicians and other health care professionals the opportunity to improve administrative efficiencies and lower costs if the process is embraced and the code set is used to its fullest potential. Increased use of automated coding tools, anticipated decreased claim rejection rates, and reduced coding errors should allow a shift in resources to analyze the robust data for better quality measurement, research, reimbursement models, public health reporting and performance tracking.

WMJ

Let us hear from you

If an article strikes a chord or you have something on your mind related to medicine, we want to hear from you. Submit your letter via e-mail to wmj@wismed.org or send it to *WMJ* Letters, 330 E Lakeside St, Madison, WI 53715.

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